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ABSTRACT

This first grade curriculum guide is based on a multidisciplinary approach to environmental education. The guide includes activities, guidelines for field trip planning, and a resource section. The guide deals with the subjects of animals, air, water, and litter. Each subject section includes activities based on the physical characteristics, man's use, and man's misuse of the subject. These activities may be used individually or in sequence, and aim to promote the development of positive attitudes toward the environment. Each activity lesson provides the teacher with objectives, teacher background information, a materials list, a preactivity, the activity, a postactivity, supplemental activities, and illustrations intended for copying. Guidelines for conducting a field trip are included to facilitate the teacher in teaching in the out-of-doors. The guidelines cover pre-field trip, field trip, and post-field trip planning. A resource section includes speakers, films, free and inexpensive materials, pamphlets, and conservation and environmental groups which may be contacted for information on environmental topics. (TK)

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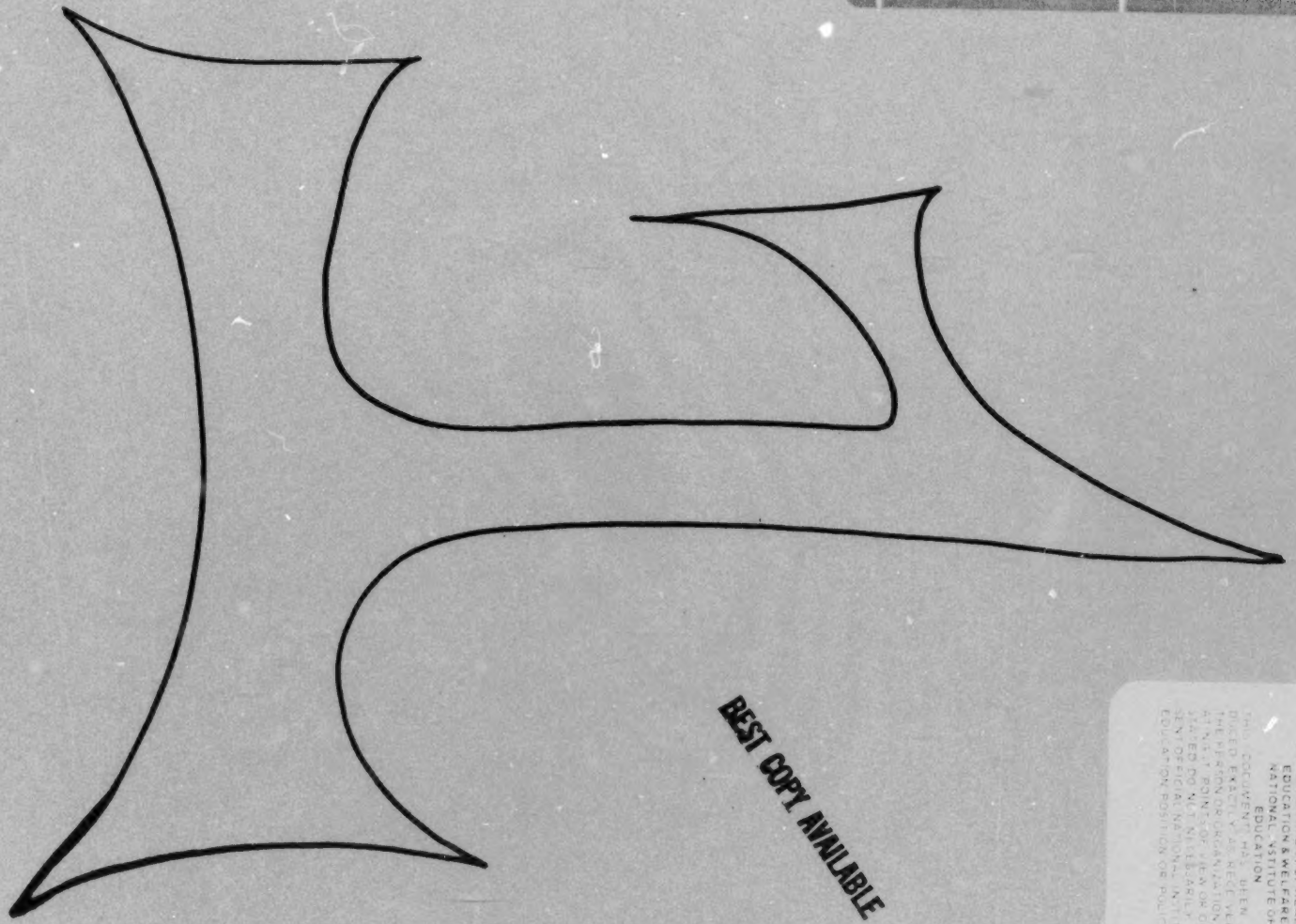

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A MULTIDISCIPLINARY PROCESS

CURRICULUM IN ENVIRONMENTAL EDUCATION

K - 12

Under Provision of Public Law 91-516, Grant No. OEG-0-72-5436

Project No. RO 21178

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Edmonds School District No. 15
Snohomish County
Lynnwood, Washington

1973

PROJECT SUMMARY

This project was designed to provide a working model for the structure and implementation of a multidisciplinary process curriculum in environmental education, grades K-12. This model emphasizes the broadly based socio-ecological approach endorsed by the Edmonds School District Environmental Education Council, as a unifying theme to be incorporated into a comprehensive environmental program. Such an approach seeks to integrate the cultural, historical, and social aspects of man with fundamental sociological principles applicable to all living organisms. It will utilize the school and total community as a field laboratory and as a basis for the investigation of ecological relationships and environmental problems. The design of the model presented here includes five phases which have been sequentially organized into the following areas:

1. To plan for the structure of appropriate training and student activities as designed by two writing teams selected on the basis of defined qualifications. The participating teams represented each grade level, K-6, and each relevant secondary discipline, 7-12. The team consulted with community, local, state, and natural resource personnel and incorporated existing materials into a total program that reflects the objectives established.

2. A plan for implementing the materials written by means of training sessions at the elementary building level and for the specific secondary disciplines and secondary teachers involved. The writing team will form a nucleus for the training of teachers in use of materials and equipment.

3. A plan to evaluate the effectiveness of materials and methods used through formal and informal feedback from students and teachers involved. Students will be evaluated on the cognitive aspects of the curriculum materials written and both teachers and students on the attitudinal aspects.

4. A plan for revision and retraining as necessitated by the analysis of evaluation procedures and results, and from community feedback.

5. A plan to continue the program utilizing district and community funds under the guidance of the Edmonds District No. 15 Environmental Council in cooperation with the District Environmental Consultant.

This project is a "beginning". It was written during four weeks of the summer of 1973. The writing team realizes that they have just scratched the surface of putting together a K-12 multidisciplinary environmental education curriculum. We know that it needs to be tried by teachers, and hope that you will use it while instructing your students. Try it out! Write in it and jot down your notes. Revise, add and delete! Then give us feedback as to how you used it and how you felt about the whole thing so that we can work your ideas into our revision next summer. There are extra lesson outlines in the back to experiment with. Now -- enjoy!

CHIPPER D. MONK

The intent of this unit is to develop awareness of basic deductive and inductive skills stressing scientific methods of study, development of attitudes and perceptions, and a process approach to learning.

In dealing with our objectives, we are using an activity oriented approach. Each of our subject areas has been divided into three parts; the PHYSICAL CHARACTERISTICS of the subject, MAN'S USE, and an awareness activity focusing on MAN'S MISUSE. Each lesson is designed to be complete in itself.

ANIMALS

Animals are a fascination for all children. With this in mind, we felt an animal study to be a natural place to begin developing environmental concepts and attitudes. With the teacher's guidance and sensitivity, the student can move from this area of fascination to an awareness of the part he and other people play in the total picture of environmental interaction. We hope that out of these beginning investigations will come a more expanded program geared to the needs of students, teachers and the community.

Chipper D. Monk

We visualize Chipper D. Monk as a creative character that may help tie in the various activities that follow. He may act as a visual aid in flannel on your flannel board or as a means of introducing lessons, related poems, films, etc. The larger picture of Chipper on the next page could be made into a ditto and serve as a cover on an Animal Booklet. You may want to adapt him into a puppet character.

We know you'll have a lot of your own good ideas, too. We'll be anxious to have you share them with us during our inservice get togethers and will want to include them in our revision.

CHIPPER D. MONK

ANIMALS

Topic: Animal Classification
Grade: One
Estimated Time: 30 minutes
Subject Areas: Lang. Arts, Art
Science, Math, Soc. Studies

LEVEL V OBJECTIVE:

THE STUDENT WILL KNOW THE CLASSIFICATION SYSTEM OF VARIOUS FORMS OF ANIMAL LIFE.

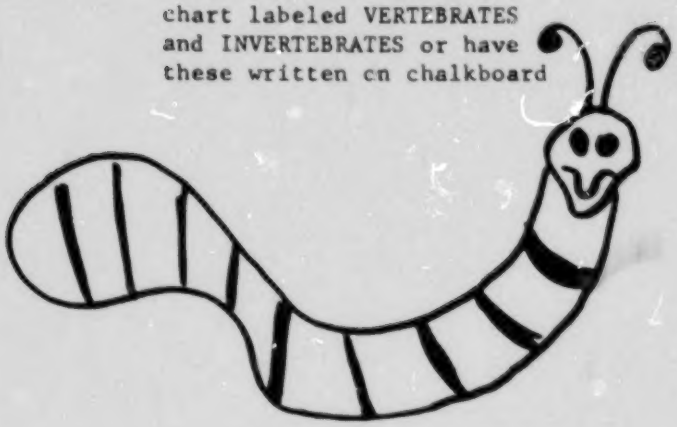
LEVEL VI OBJECTIVE:

THE STUDENT WILL KNOW THE DIFFFERENCE BETWEEN VERTEBRATES AND INVERTEBRATE ANIMALS.

GETTING IT TOGETHER

MATERIALS

Pictures of animals with and without backbones (teacher may have these or students may search through magazines); glue; scissors; attached worksheet for each student; chart labeled VERTEBRATES and INVERTEBRATES or have these written on chalkboard



TEACHER BACKGROUND INFORMATION

A. Vertebrates have backbones.
   1. People have backbones. They are vertebrates.
   2. Many common animals have backbones: cat, dog, cow, deer, fish, snakes. They are vertebrates.

B. Invertebrates do not have backbones.
   1. Bugs, worms, insects, and many other small creatures have no backbone.
   2. Some animals without backbones have a shell or crust to protect them. The muscles of the animal are attached to the shell or crust. The shell or crust might be called an outside skeleton: lobsters, clams, shrimp.

PRE-ACTIVITY

1. Prepare the chart that the pictures will go on or label the section of the chalkboard you'll be using.
2. Prepare ditto of worksheet.
3. Collect the pictures of Vertebrates and Invertebrates, or have the students collect pictures by going through magazines.
4. Discuss the terms VERTEBRATE and INVERTEBRATE with your students.

ACTIVITY

1. Distribute the pictures either one to each student in the class or divide class into small groups and distribute pictures to groups.
2. Have students come and place pictures, one at a time, on the chart.
3. As a group, discuss and correct the choices made.

POST-ACTIVITY

1. Pass out scissors, glue and worksheet to each student.
2. Have students work alone or quietly in groups of two to complete worksheets.

SUGGESTED ADDITIONAL ACTIVITES

WHY NOT TRY THESE?

L.A. 1. Show an animal film and have students list animals they see, classifying them as VERTEBRATE or INVERTEBRATE.

2. Play the "Mystery Animal" game using animal cards with pictures on them or role playing the animal. Include clues referring to Vertebrates and Invertebrates.

   Example: My name begins with W. I have no backbone. I live in the dirt. I'm very thin and love to wiggle and squirm. Who am I?

   Let students act out their animal and/or show their mystery card after the class has guessed the animal.

Math 3. Group animals into sets for a math activity.

L.A. 4. Do a phonics drill activity using animal pictures and having students indicate also whether animal in Vertebrate or Invertebrate.

   Example:

Picture	Beg. Sound	Animal
Dog	D	Vert.

Soc. St. 5. Classify animals as to whether or not they would make good pets. Include discussion on animal needs and owner responsibilites.

RESOURCES

STUDENTS

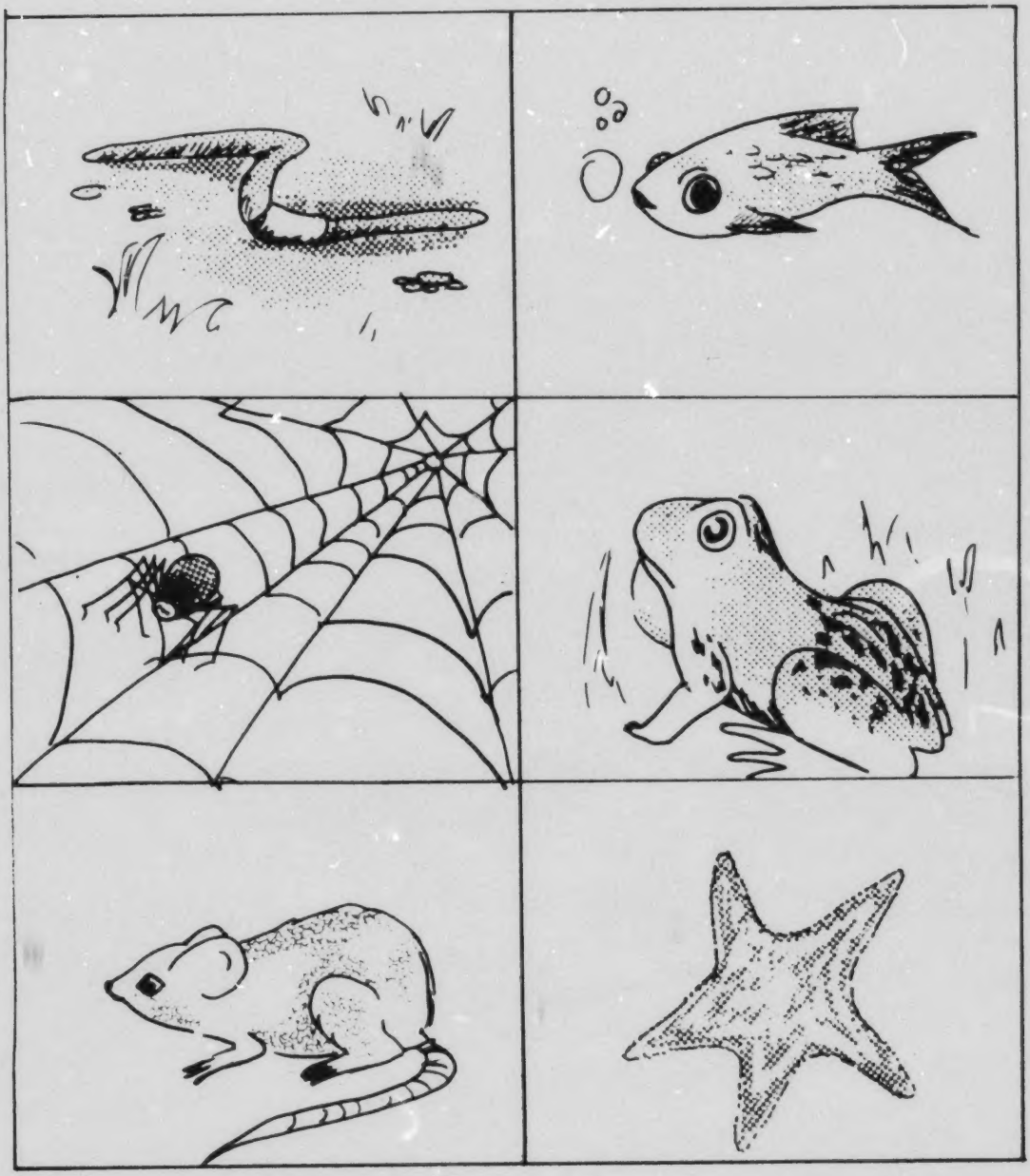
See attached Bibliography

TEACHER

Films:

"Animals with Backbones" EF 506
"Animals without Backbones" EF 507
"Insect in a Garden" EF 1493
"Little Animals" EF 208
"Looking at Amphibians" EF 1187
"Looking at Fishes" EF 1581
"Looking at Mammals" EF 1514
"Looking at Reptiles" EF 1180

Directions: Cut and paste these pictures onto a large sheet labeled Vertebrates and Invertebrates.



ANIMALS

Topic: Animal Classification
Grade: One
Estimated Time:
Subject Areas: Lang.Arts, Art

LEVEL V OBJECTIVE:

THE STUDENT WILL KNOW THE CLASSIFICATION SYSTEM OF VARIOUS FORMS OF ANIMAL LIFE.

LEVEL VI OBJECTIVE:

THE STUDENT WILL BE ABLE TO RECOGNIZE VERTEBRATES AND INVERTEBRATE ANIMALS.

GETTING IT TOGETHER

MATERIALS

Pictures of different animals from both areas; a field trip to wooded area or beach area; films showing various animals; paper and pencil

TEACHER BACKGROUND INFORMATION

A. Vertebrates have backbones.
   1. People have backbones. They are vertebrates.
   2. Many common animals have a backbone: cats, dogs, cows, deer, fish, snakes. They are vertebrates.

B. Invertebrates do not have backbones.
   1. Bugs, worms, insects, and many other small creatures have no backbone.
   2. Some animals without backbones have a shell to protect them. The muscles of the animal are attached to the shell or crust. The shell or crust might be called an outside skeleton: lobsters, clams, shrimp.

PRE-ACTIVITY

Films: "Animals with Backbones" EF 506
"Animals without Backbones" EF 507

Pictures of vertebrates and invertebrates - classify them.

ACTIVITY

After discussion and visual drill, pass out drawing materials and let students choose three animals from each division to illustrate and label. If they choose to do more - fine!

POST-ACTIVITY

Let students share illustrations with each other. Create bulletin board area.

RESOURCES

STUDENT

See attached Bibliography

TEACHER

Films:

"Animals with Backbones" EF 506
"Animals without Backbones" EF 507
"Insects in a Garden" EF 1493
"Little Animals" EF 208
"Looking at Amphibians" EF 1187
"Looking at Mammals" EF 1514
"Looking at Fishes" EF 1581
"Looking at Reptiles" EF 1180

ANIMALS

Topic: Animal Identification
Grade: One
Estimated Time:
Subject Areas: Lang. Arts, Science

LEVEL V OBJECTIVE:

STUDENTS WILL KNOW THE CLASSIFICATION SYSTEMS OF THE VARIOUS FORMS OF PLANT AND ANIMAL LIFE.

LEVEL VI OBJECTIVE:

THE STUDENT WILL BE ABLE TO IDENTIFY AT LEAST FIVE PLANTS AND FIVE ANIMALS OF HIS LOCAL ENVIRONMENT.

GETTING IT TOGETHER

MATERIALS

Pictures of animals; paste; papers; crayons

TEACHER BACKGROUND INFORMATION

Teacher should have a definition of the word habitat applicable to her group of students.

PRE-ACTIVITY

Discuss:

1. What animals live in our area? List.
2. How could we group them (vertebrates, invertebrates)?
3. What kinds of homes do you think they live in?

ACTIVITY

1. Go on a nature walk.
2. Make a chart showing animals you saw and their kind of home. Teacher could possibly have ditto cut outs to paste onto a chart.

SUGGESTED ADDITIONAL ACTIVITIES

Take pictures of animals in area.

Make a terrarium for frogs or toads.

Make a bird house or feeders and keep them stocked.

RESOURCES

STUDENT

See attached Bibliography

TEACHER

Films:

"Animal Homes" E 221
"Animals and Their Homes" EF 9
"Animals are Different and Alike" EF 289
"Animals in Spring" EF 356
"Animals in Summer" EF 357
"Animals in Winter" EF 358
"Beaver Home" EF 1306
"Bird Homes" EF 1037
"We Explore the Field and Meadow" EF 254
"We Explore the Woodland" EF81

ANIMALS

Topic: Animals - Man's Use
Grade: One
Estimated Time:
Subject Areas: Soc. Studies, Lang. Arts, Science

LEVEL V OBJECTIVE:

STUDENTS WILL CONSIDER NON-EXPLOITIVE AND NON-WASTEFUL ALTERNATIVES FOR USE OF THE ENVIRONMENT, I.E. RECREATION, LEISURE, LIFESTYLE.

LEVEL VI OBJECTIVE:

THE STUDENT RECOGNIZES THAT THE MEAT HE EATS COMES FROM ANIMALS. (BEEF FROM COWS, PORK FROM PIGS.)

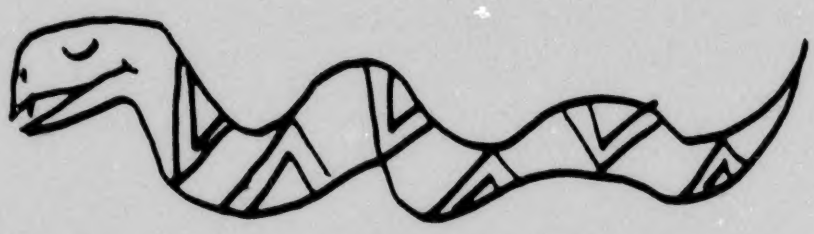
GETTING IT TOGETHER

MATERIALS

Chart, magazines, glue, newspaper ads, pictures of your animals (pigs, cows, chickens, deer, etc.)

TEACHER BACKGROUND INFORMATION

You're on your own!



PRE-ACTIVITY

1. Discussion - ask children what types of meat they like to eat.
2. Where do we get the meat we eat?
3. What animals give us certain kinds of meat?

ACTIVITY

1. Find and cut out pictures of meat.
2. Paste on bulletin board or chart.

SUGGESTED ADDITIONAL ACTIVITIES

1. Carry out the activity further with by-products from the animals.
2. Visit the meat market.

RESOURCES

STUDENT

See attached Bibliography

TEACHER

See attached Bibliography

ANIMALS

Topic: Animal Identification
Grade: One
Estimated Time:
Subject Areas: Lang. Arts, Art, Math

LEVEL V OBJECTIVES:

STUDENTS WILL KNOW THE CLASSIFICATION SYSTEMS OF THE VARIOUS FORMS OF PLANT AND ANIMAL LIFE.

THE STUDENT WILL BE ABLE TO IDENTIFY PLANTS AND ANIMALS OF HIS LOCAL ENVIRONMENT.

LEVEL VI OBJECTIVE:

THE STUDENT WILL BE ABLE TO RECOGNIZE THREE BIRDS OF HIS LOCAL ENVIRONMENT.

GETTING IT TOGETHER

MATERIALS

Plywood, screws, brick, tagboard, pictures of local birds, book of birds for identification

TEACHER BACKGROUND INFORMATION

Build or have parent or industrial arts teacher build a simple plywood feeder like the one shown here. It will stay put even on a concrete window sill. If you can put hooks in your sills, insert screw eye as shown in the drawing and use wire to hold the feeder in place. (See illustration in resource unit.)

PRE-ACTIVITY

Discuss why people help supply birds with food. Find pictures of different kinds of birds native to your locale.

ACTIVITY

Make a chart for recording the names and numbers of birds which visit the feeder. Have a picture to paste above the name.

(see Illustration)

Chart Activity

	(Pic.) Robin	(Pic.) Chickadee	(Pic.) Crow
Mon.			
Tues.			

Appoint a committee each day to tally and name the birds which visit the feeder.

POST-ACTIVITY

At the end of the week, tally and discuss the number and types of birds.

WHY NOT TRY THESE?

SUGGESTED ADDITIONAL ACTIVITIES

Do finger paintings of birds; arrange them on bulletin board on a background which reflects the season.

Have the children bring in empty baby food jars. Make bird cut outs as decoration for the jars.

Fill jars with sunflowers or seeds that will attract birds.

Other types of bird feeders:

a. Simple jar feeder - 1/2 gallon or 1 gallon glass jar, heavy string cord, 15-20" branch.

Directions: Clean jar and remove label. Tie cord around branch and jar. (Branch may be taped in place first) Have a big person hang the jar from a branch and then put a cup of mixed seed in the jar.

b. Simple drilled log, suet-seed feeder. Eight 10" x 3/4" diameter logs drilled with 3/4" holes randomly. Also drill hole in the top for an eye screw or through side-to-side for hanging cord. Also, eye screw and/or cord. Suet, peanut butter and seed mixture.

Directions: Mix peanut butter and seed to a putty consistency. Screw the eye screw into the log or thread the hanging cord. Push the seed mixture into holes, also suet (during winter months). Hang.

c. Pine cone feeder (cold weather) - 1 large pine cone, peanut butter, mixed seed, medium wire.

Directions: Tie or wrap wire firmly around pine cone. Mix peanut butter and seed to putty consistency. Butter into cone and hang.

d. Tin plate and can feeder - Materials: coffee can, 1-6", aluminum pie plate (9"), one coat hanger, one drilled tape cork or pinch type clothes pin. Bird seed mix. Directions: punch holes in middle of pie tins and coffee can (may be pre-punched). Straighten coat hanger to thread through tins and can as illustrated. Bend and tape on bottom of 6" tin. Punch 5 holes with old style triangular punch can opener in bottom outside of coffee can. Thread coffee can onto wire; fill can with seed and cap with 9" pie plate. Slide cork over wire or clip clothes pin on wire to hold plate tight to can. Bend hook in hanger and hang.

RESOURCES

STUDENT

See attached Bibliography

TEACHER

Grade Teacher - January 1967

Films:

"Birds Homes" EF 1037
"Birds: How they Live, Where they Live" EF 401

ANIMALS

Topic: Animals - Recreation
Grade: One
Estimated Time:
Subject Areas: Lang. Arts, Soc. Studies

LEVEL V OBJECTIVE:
STUDENTS WILL CONSIDER NON-EXPLOITIVE AND NON-WASTEFUL ALTERNATIVES FOR USE OF THE ENVIRONMENT.

LEVEL VI OBJECTIVE:
THE STUDENT WILL KNOW THAT HUNTING AND FISHING LAWS CONTROL GAME ANIMALS IN OUR LOCAL ENVIRONMENT.

GETTING IT TOGETHER

MATERIALS

None

TEACHER BACKGROUND INFORMATION

Teacher should obtain list of hunting and fishing rules.

ACTIVITY

Discussion.

1. Find out how many fish or hunt.
2. Draw conclusion about recreation.
3. How is it that so many of us hunt and fish, and yet there are still animals left.
4. Discuss hunting and fishing regulations.

WHY NOT TRY THESE?

SUGGESTED ADDITIONAL ACTIVITIES

1. Show them hunting and fishing license.
2. Draw a picture of the kind of animal you would like to hunt or your biggest fish.
3. Have them share pictures and discuss them.
4. Discuss the importance of environmental quality of hunting and fishing areas.

RESOURCES

STUDENTS

See attached Bibliography

TEACHER

Films:

"Hunter and the Forest" EF 296
"Mother Deer and her Twins" EF 210
"Bear Country" EF 2031
"Moose Baby" EF 1177
"Wild Animal Families" EF 91

ANIMALS

Topic: Animal Population
Grade: One
Estimated Time:
Subject Areas: Lang. Arts, Science

LEVEL V OBJECTIVE:
THE STUDENT WILL BE ABLE TO IDENTIFY ENVIRONMENTAL PROBLEMS, ESPECIALLY IN HIS OWN LOCAL ENVIRONMENT.

LEVEL VI OBJECTIVE:
THE STUDENT WILL KNOW THAT SNAILS REPRODUCE AT A VERY HIGH RATE.

GETTING IT TOGETHER

MATERIALS

Aquarium or terrarium
snail, dirt, lettuce

TEACHER BACKGROUND INFORMATION

PRE-ACTIVITY

Set up aquarium.

ACTIVITY

1. Raise snails in an aquarium.
2. Record the number of offspring on a graph.
3. How is the snail population alike or unlike human population?

POST ACTIVITY

Discuss why population should be controlled.

RESOURCES

STUDENT

See attached bibliography.

TEACHER

Snails: Backyard Science EF 231

ANIMALS

Topic: Animals - Misuse
Grade: One
Estimated Time:
Subject Areas: Art, Drama, P.E.

LEVEL V OBJECTIVE:

STUDENT WILL PERCEIVE HIMSELF AS A PART OF NATURE AND WILL DESIRE TO LIVE IN HARMONY WITH NATURE.

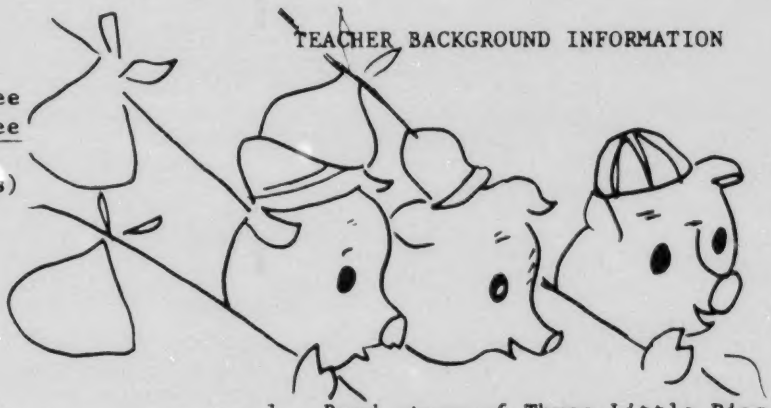
LEVEL VI OBJECTIVE:

THE STUDENT WILL KNOW HOW VARIOUS ANIMAL HABITATS IN THE LOCAL ENVIRONMENT ARE DESTROYED.

GETTING IT TOGETHER

MATERIALS

Filmstrip on "Three Little Pigs," Three Little Pigs book (Read Along Series)



TEACHER BACKGROUND INFORMATION

PRE-ACTIVITY

1. Read story of Three Little Pigs.
2. Dramatize it.
3. Bring or lead discussion that animal homes can be destroyed - by many kinds of wolves, including man.

ACTIVITY

1. Put chart on board:

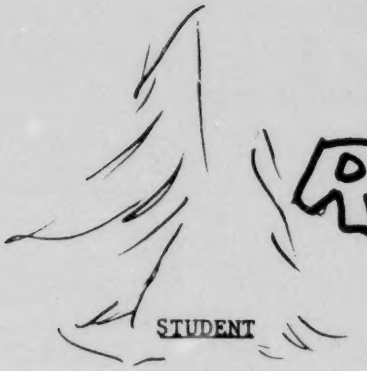
Animal	Home	Ways Home Destroyed

2. Discuss implications of homes being destroyed. What part does man play?

3. How can you help the problem?

POST-ACTIVITY

On a nature walk, look for animal homes that have been destroyed and suggest possible causes.



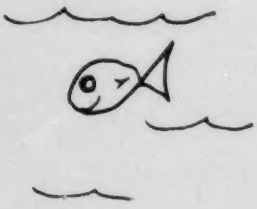
RESOURCES

STUDENT

See attached Bibliography.

TEACHER

See attached Bibliography.



SUPPLEMENTARY ANIMAL ACTIVITIES

1. Make a booklet or scrapbook showing land, air and water animals.

2. Plan a display showing domesticated animals and wild animals.

3. List animals which pupils feel help man - discuss how some work for man and some provide clothing.

4. Discussion on protection: What would happen if all the animals in the world suddenly lost their ability to protect themselves? Have the children discuss the physical features that each of the following animals use for protection: elephant, squirrel, robin, snake, lizard, frog.

5. Discussion on color: Why are polar bears white? How well would a black bear do in snow country? How about frogs and toads? Does their color often match their surroundings?

6. P.E. Game - "Cats and Birds"

   One player, the cat, is blindfolded. The other players, the birds, are each given a number, one through five. The birds scatter and settle themselves within easy hearing distance. The cat creeps along, stops and says "Meow" one or more times (the number of 'meow's' indicates the group of birds that must answer). The birds answer by giving a call. The cat chooses a bird and tries to guess the player's name. If the player was not guessed in three tries, the bird becomes the cat and is blindfolded.*

7. Monkeys have tails. Leopards have spots. Elephants have wrinkled skin. Some leaves turn red in the fall. Why? Write or tell a humorous or non-scientific explanation for some phenomenon of nature.

*U.S.O.E. Outdoor Ed. Primary Resource Guide, Grade 1-3 U.S. Dept. of H.E.W., Office of Education

SUPPLEMENTARY BIRD ACTIVITIES

1. Show and discuss pictures of the robin.

Talk about:	The robin:
The color of its feathers	Has a yellow bill
Physical characteristics	Is covered with feathers
	Has two legs
	Has three toes in front and one behind
Movements	Can hop, run and fly
Food	Eats worms and insects
The nest it makes	Uses grass, twigs, weeds, mud, and may use bits of string, if available
	The mother robin gets into the nest and turns around in it to make it the right shape.
	She lines it with dry grass.
Eggs it lays	The eggs are a beautiful blue.
Care of the eggs and the baby birds	The mother bird sits on the nest to keep the eggs warm.
	She and the father bird feed worms and insects to the baby birds.
	She protects them and teaches them to fly.

2. Show and discuss picutres of another bird common to your particular school neighborhood. Compare this bird with the robin as to:
   Size - Larger or smaller
   Color - Same or different

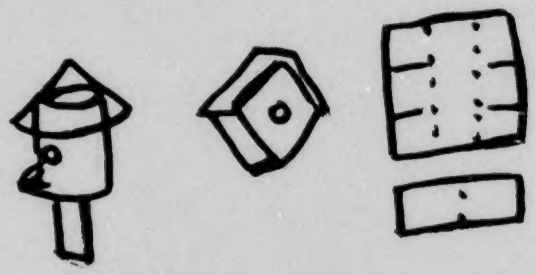
3. Show and discuss pictures of several other of the more common birds. Have the children note and discuss likenesses and differences. Point out only one or two striking characteristics of each, such as:
   The red head of the redheaded woodpecker
   The topknot on the cardinal's head

4. Have them cut trees from black construction paper. Use green and pink crepe or tissue paper for leaves and blossoms and paste to the branches. These may be used in a mural or made to stand with clay bases or with block or paper standards.

5. Have them draw and cut out different birds. They may be: Inserted in a small clay base, pasted to a stick and stuck into earth in a flower pot, fastened to the perch of a paper or block bird house, used in murals or books about spring, made into a small toy with folded wings that move up and down.

6. Have them:
   - Make bird houses of colored paper or simple box construction
   - Build bird houses of blocks
   - Make flowers of crepe, tissue, and colored paper with small slats, pipe cleaners, or cardboard used as stems
   - Draw and paint flowers
   - Make fairy flowers or imaginary flowers
   - Make bowls, vases, and flower pots of clay
   - Insert a small vial in a clay base and use it as a vase for a small bouquet of real flowers

(5)



(6).

IDENTIFYING BIRDS

Bird identification can be a fascinating activity for children at almost any grade level. One way to make it interesting is to have the children list characteristics that they think can help to identify different kinds of birds. The suggestions might be written on the chalkboard. Then have the children try to organize or classify the characteristics under the categories listed at the left below :

Largeness	Size
Coloring	Shading
Form (of bird and bill)	Shape (of bird and bill)
Notes	Song
Flight pattern	Sweep
Habitat	Surroundings

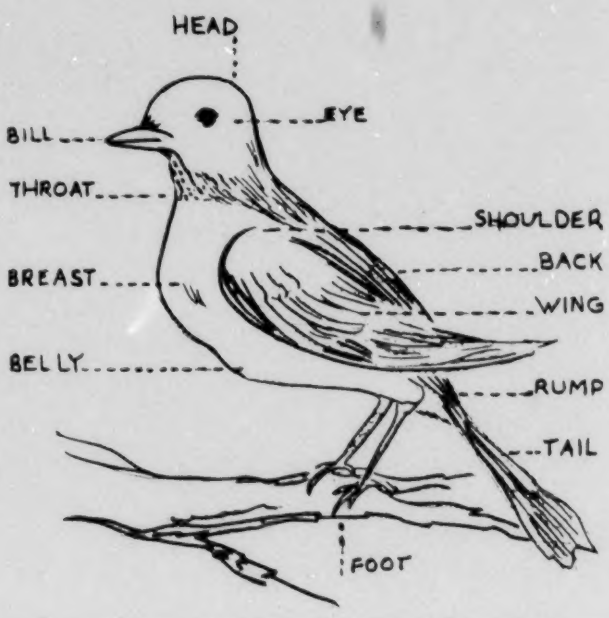
Finally, ask the group to try to think of words that mean the same as the words in the left-hand column, but that begin with the letter "s". The results that can be obtained are given in the right-hand column above. The words in this column can be referred to as the "Six S's" and may be used as an aid to identifying birds.

MAKING A BIRD SURVEY

After working with the preceding activity, encourage the children to make a survey of the different kinds of birds that can be found in the local region. A committee of class members might be appointed to compile a list of the birds and perhaps to prepare a sketch or a colored drawing of each bird.

NAMING THE PARTS OF BIRDS

Have the children learn the correct names for the parts of birds, and use these names in describing the birds they observe. A sketch such as the one given here might be drawn on the chalkboard or projected for the class to study or to copy.



OBSERVING BIRD FEATHERS

Study bird feathers under a magnifying glass or a microscope. Observe the tiny interlocking structures that form cells and produce cavities that hold air, making the feather both strong and very light in weight.

Observe the differences in feathers according to the different parts of the bird's body from which the feathers come and the uses for which they are intended. Some feathers are small and soft and have no central shaft. These are called down and help to keep the bird warm. Other feathers have central shafts and are shaped something like fern leaves. They are contour feathers, the ones that cover the body and wings and make up the tail of the bird.

Younger children may be interested mainly in collecting feathers of various sizes or in finding feathers of many different colors.

LISTENING FOR THE FIRST BIRD SOUNDS IN THE MORNING

There may be some "early risers" in the group or some class members who would like to get up before dawn and find out which birds are the first to make their presence known at the start of the day.

These children can make a list of the first bird sounds to be heard outdoors in the morning. And they can try to find answers to questions such as these: (a) What is the first bird call like in the morning? (b) Which kinds of birds soon join in the chorus after the first bird note is heard? (c) Do any birds sing before daylight? (d) Why would birds be alert so early in the morning? (e) What food would birds be most likely to find early in the morning, and why?

DISTINGUISHING BIRD CALLS

Have the children observe one kind of bird over a long period of time to see if they can "learn his language." That is, have them try to determine the meaning of the various bird calls such as those of mating, fright, danger, contentment, and so on.

OBSERVING THE WAYS THAT BIRDS GET FOOD

Assign the children to watch the methods and procedures used by birds in getting food.

Each child might take one kind of bird to watch and report on. For example, one child might observe robins and he might find answers to questions such as: What are robins looking and listening for when they turn their heads to one side as they watch the ground in search of food? How does a robin use his bill in getting food?

STUDYING A BIRD'S NEST

Find an abandoned bird's nest and let the children dismantle it and list the various things that were used as building materials. (If the nest has been abandoned recently, there may be the problem of bird lice to consider. An insect spray may be used as a precaution or to overcome the problem.)

Sometimes an interesting item such as a threaded needle may be found in the nest materials. In any case, the variety of materials used in building the nest is likely to be surprising to the children.

An attractive chart listing and displaying samples of the different materials making up the nest can be prepared. The chart and the related discussions could lead to interest in discovering how various birds build their nests and where they obtain materials.

PROVIDING MATERIAL FOR BIRDS' NESTS

The children may find it interesting to help supply birds with nesting material. The first step could be to staple a piece of quarter-inch wire-mesh hardware cloth to a wooden frame - to make a sort of box - and to place this frame near a bird feeder or a bird bath. Then it could be kept supplied with short pieces of yarn and string and narrow strips of cloth. All of these materials should be less than six inches long.

The children should watch to see what kinds of materials are taken by different kinds of birds, how the birds loosen the materials from the mesh, and how the birds carry and use materials.

A follow-up activity could be an observation of nearby nests to see whether any of the "donated supplies" were used.

LOCATING SITES FOR BIRDHOUSES

An interesting project can be the selection of the best sites for birdhouses made by the children in industrial arts or crafts classes. (Perhaps the birdhouses can be made in connection with the outdoor education activities of the group.)

The sites selected and the kinds of birdhouses made should be based on a study of the birds' needs and habits. Observations of the birds' use of the birdhouses in the chosen locations can determine whether or not these locations were well-selected.

ENVIRONMENTAL BIBLIOGRAPHY

STUDENT

SS THE TRUE BOOK OF ANIMAL HOMES
PONDENDORF

M SANDY, THE SWALLOW
GENE DAREY

CH HOW WE GET OUR DAIRY FOODS
MARJORIE ANN BANKS

E ANIMALS EVERYWHERE
INGRI AND EDGAR d'AULAIRE

590 CAMOUFLAGE IN NATURE
EDWARD S. ROSS

M A BUNNY, A BIRD, A FUNNY CAT
MIRIAM SCHEIN

PB HOME FOR A BUNNY
MARGARET BROWN

SS WHEN AN ANIMAL GROWS
SELSAM

SS CATCH A CRICKET
STEVENS

677 ANIMALS THAT CLOTHE US
ENGELBERT

PA LOOK AT A GULL
WRIGHT

PA WHOSE EYE AM I?
YLLA

PA ANIMALS AROUND MY BLOCK
SEYMORE REIT

PA FOREST BABIES
JEAN PARRISH

M BENJAMIN IN THE WOODS
ELEANOR CLYMER

M SALLY, THE SCREECH OWL
GENE DARBY

CH I WANT TO BE AN ANIMAL DOCTOR
CARLA GREEN

CH LET'S GO TO A FARM
LAURA SOOTIN

SS THE TRUE BOOK OF ANIMAL HOMES
PONDENDORF

SS BENNY'S ANIMALS AND HOW HE
PUT THEM IN ORDER- SELSAM

M LITTLE BEAVER'S VISIT
MINARIK

PB PARSLEY
LUDWIG BEMELMAN

PA ANIMAL BABIES
YLLA

PB ALFRED, THE LITTLE BEAR
BILL BINZEN

M ZEKE THE RACCOON
HOLL

HS EVERYBODY EATS AND EVERYBODY
HAS A HOME - GREEN

HS PATTY'S PET
SID HOFF

PA MOUSE TRAIL
DAVIS

PA THE BEAVER
GROSSET AND DUNLOP

SS ANTS ARE FUN
MYRICK

PA FAREWELL TO SHADY GLADE
BILL PEET

PB HOMES
VIRGINIA PARSONS

SS A FUNNY PLACE TO LIVE
ROBERT BURCH

M MABEL THE WHALE
KING

SS BIRD NESTS
SHACKELFORD

PA ANIMALS SHOULD DEFINITELY NOT
WEAR CLOTHING - BARRETT

PA MAKE WAY FOR DUCKLINGS
McCLOSKEY

SS EVERYDAY ANIMALS
GERTRUDE ALLEN

SS WHEN INSECTS ARE BABIES
GLADYS CONKLIN

SS WHAT IS A FROG?
GENE DARBY

SS THE SONG OF THE DAY BIRDS
DAHLOV IPCAR

SS WHAT MAKES A BIRD A BIRD?
MAY GARELICK

SS HOW MANY LEGS? HOW MANY TOES?
MARY ELTING

SS WHEN AN ANIMAL GROWS
MILLICENT SELSAM

E ANIMAL HIDE AND SEEK
IPCAR

SS GROWING
NEURATH

PB CREATURES GREAT AND SMALL
MICHAEL FLANDERS

PA THE BIGGEST HOUSE IN THE WORLD
LEO LIONNI

HS PEDRO AND THE BANANAS
SYD HOFF

M A HORSE ALPHABET
PALAZZO

SS LET'S FIND OUT ABOUT BIRDS
SHARP

PA THE BEST NEST
EASTMAN

HS FLOCKS OF BIRDS
ZOLOTOW

SS AT HOME IN ITS HABITAT
PHYLLIS BUSCH

SS WHAT IS A BIRD?
GENE DARBY

SS INSECTS THAT LIVE TOGETHER
DEMPSEY AND SHEEHAN

SS LET'S LOOK AT INSECTS
HARRIET HUNTINGTON

SS ALL UPON A STONE
JEAN CRAIGHEAD GEORGE

SS WHAT A FROG CAN DO
TERI MARTINI

TEACHER

(Many of these have large illustrations suitable for child discussion and recognition.)

591 V ANIMALS AND HOW THEY LIVE - VERITE

598.2 AN INTRODUCTION TO BIRDS - KIERAN

591 F ANIMAL MOTHERS AND BABIES - NIXON

677 E ANIMALS THAT CLOTHE US - ENGLEBERT

590 S EXPLORING THE ANIMAL KINGDOM - SELSAM

598.2 THE BOOK OF SONGBIRDS HAUSMAN

598.2 BIRDS AT HOME HENRY

364 BOY SCOUTS OF AMERICA (ZOOLOGY, WILD LIFE MANAGEMENT, INSECT LIFE, FISHING AND ANIMAL INDUSTRY, REPTILE STUDY)

598.2 BACKYARD BIRDS RUSH

591 THE LANGUAGE OF ANIMALS SELSAM

591 ANIMAL HOMES ZIM

598.2 BIRDS IN THEIR HOMES WEBB

574 PLANT AND ANIMAL PARTNERSHIP

AUDIO-VISUAL

EF 1098 ADVENTURES OF A CHIPMUNK FAMILY

EF 221 ANIMAL HOMES

EF 1186 ANIMAL TRACKS AND SIGNS

EF 289 ANIMALS ARE DIFFERENT AND ALIKE

EF 9 ANIMALS AND THEIR HOMES

EF 356 ANIMALS IN SPRING

EF 357 ANIMALS IN SUMMER

EF 358 ANIMALS IN WINTER

EF 12 ANIMALS PROTECT THEMSELVES

EF 1256 ANIMALS USEFUL TO MAN

EF 1178 ANIMALS - WAYS THEY EAT

EF 506 ANIMALS WITH BACKBONES

EF 507 ANIMALS WITHOUT BACKBONES

EF 2031 BEAR COUNTRY

EF 1306 BEAVER DAM

EF 1196 BIG LAND ANIMALS OF NORTH AMERICA

EF 1037 BIRD HOMES

EF 401 BIRDS: HOW THEY LIVE; WHERE THEY LIVE

EF 1493 INSECTS IN A GARDEN

EF 208 LITTLE ANIMALS

EF 1187 LOOKING AT AMPHIBIANS

EF 1581 LOOKING AT FISHES

EF 1514 LOOKING AT MAMMALS

EF 1180 LOOKING AT REPTILES

EF 210 MOTHER DEER AND HER TWINS

EF 1177 MOOSE BABY

MOTHER RABBIT'S FAMILY

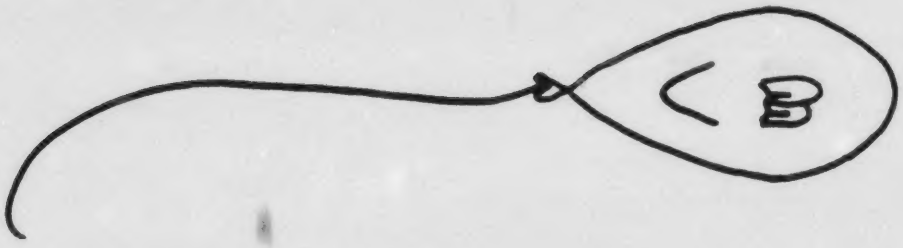
EF 231 SNAILS: BACKYARD SCIENCE

EF 254 WE EXPLORE THE FIELD AND MEADOW

EF 81 WE EXPLORE THE WOODLAND

EF 91 WILD ANIMALS FAMILIES

PUFF O'AIRE



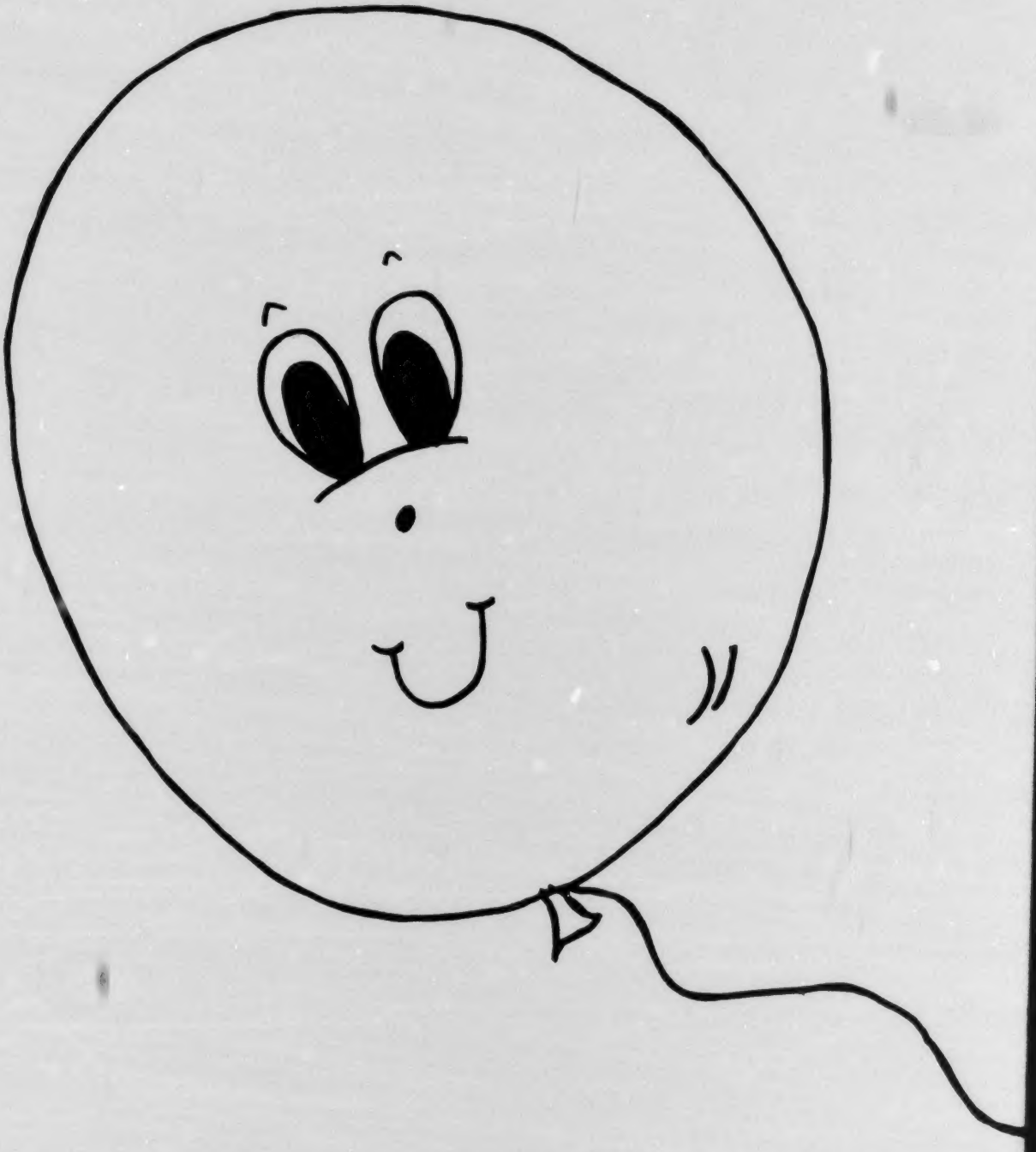
The intent of this unit is to develop awareness of basic deductive and inductive skills stressing scientific methods of study, development of attitudes and perception, and a process approach to learning.

In dealing with our objectives, we are using an activity oriented approach. Each of our subject areas have been divided into three parts, the PHYSICAL CHARACTERISTICS of the subject, MAN'S USE, and an awareness activity focusing on MAN'S MISUSE. Each lesson is designed to be complete in itself.

Air is around us and covers the earth like a thin blanket. Air is necessary to all life forms in one way or another. Children should develop an awareness of the ways in which air affects them, how it moves, and how it carries odors and noise.

We visualize Puff O'Aire as a creative character that may help tie in the various activities that follow. He may act as a visual aid in flannel on your flannel board or as a means of introducing lessons, related poems, films, etc. The larger picture of Puff on the next page could be made into a ditto and serve as a cover on an Air Booklet for each student. You may want to adapt him into a puppet character. We know you'll have a lot of your own good ideas, too. We'll be anxious to have you share them with us during our inservice get togethers and will want to include them in our revision.

PUFF O'AIRE



AIR

Topic: Air - Physical Characteristics
Grade: One
Subject Areas: Science

LEVEL V OBJECTIVE:
THE STUDENT WILL COMPREHEND THE PHYSICAL CHARACTERISTICS OF AIR.

LEVEL VI OBJECTIVE:
THE STUDENT WILL UNDERSTAND THAT AIR TAKES UP SPACE.

GETTING IT TOGETHER

MATERIALS

Balloons, aquarium, two small glasses

TEACHER BACKGROUND INFORMATION

"Air" is that thin band of mixed gases that envelops the planet on which we live. It's mostly a mixture of nitrogen and oxygen gases... invisible, odorless and tasteless. We could not exist without air. The average individual breathes 35 pounds of air each day. This is six times as much as the food and drink he consumes. Pure air is important to our way of life.

In the U.S., we pollute our air in a variety of ways each year. Poisonous gases pour into our air from car exhaust. Poisonous gases come from factories and power plants burning coal or oil containing sulfer. Other burning fuels can create an odorous brown haze over an area. Smog envelops many city areas. Particles in the air from auto fuels, building materials, etc., either settle to the ground or remain in the air. "Dirty air" ruins crops, kills cattle, wastes fuel in power plants, blocks out the sun and contributes to respiratory diseases.

TEACHER BACKGROUND (cont.)

Air pollution is one of America's great problems. It can be controlled in factories and power plants, in motor vehicles, in city trash, and in heating equipment. The campaign for clean air is everyone's job - government, industry and the individual.

PRE-ACTIVITY

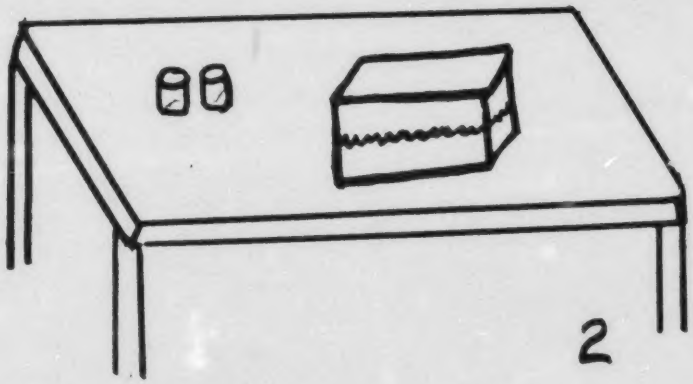
Set up experiment. Blow up balloons, fill aquarium, and get glasses.

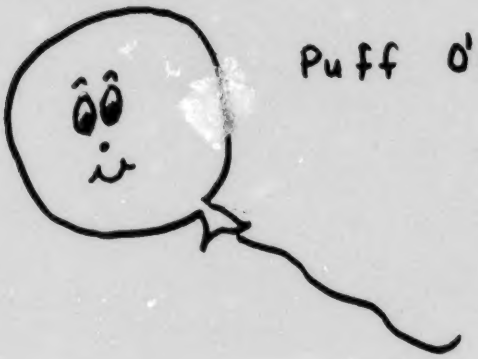
ACTIVITY

1. Blow up balloons and put them on display. Ask children what it is that makes the balloon so round and full. In a few days, after the balloon has lost air, discuss why the balloon has become limp.

2. Pouring Air:
   A. Using 2 empty glasses and a water filled aquarium, have a child push one glass down into the water.
      Questions:
      1. Why did it take so much force to move the glass down and keep it down? Air fills space.

      2. Why doesn't the glass fill with water? Air takes up space.





3. How can we get the glass to fill with water? Tilt and pour out the air.

B. Using 2 glasses, one filled with air and the other with water, tilt one so that the air from one bubbles up into the other while both are held under water.

4. What is happening? The one tilted fills with water and the other fills with air.

5. What happened to the glass that was filled with water? Where did the water go?

POST-ACTIVITY

Child repeats experiment.

RESOURCES

Student

See attached bibliography

Teacher

Films:

"Air" EF 4
"Introducing Air" EF 1292
"Air All About Us" EF 394
"Gravity, Weight, and Weightlessness" EF 233

AIR

Topic: Air - Physical Characteristics
Grade: One
Estimated Time:
Subject Areas: Science

LEVEL V OBJECTIVE:
THE STUDENT WILL COMPREHEND THE PHYSICAL CHARACTERISTICS OF AIR.

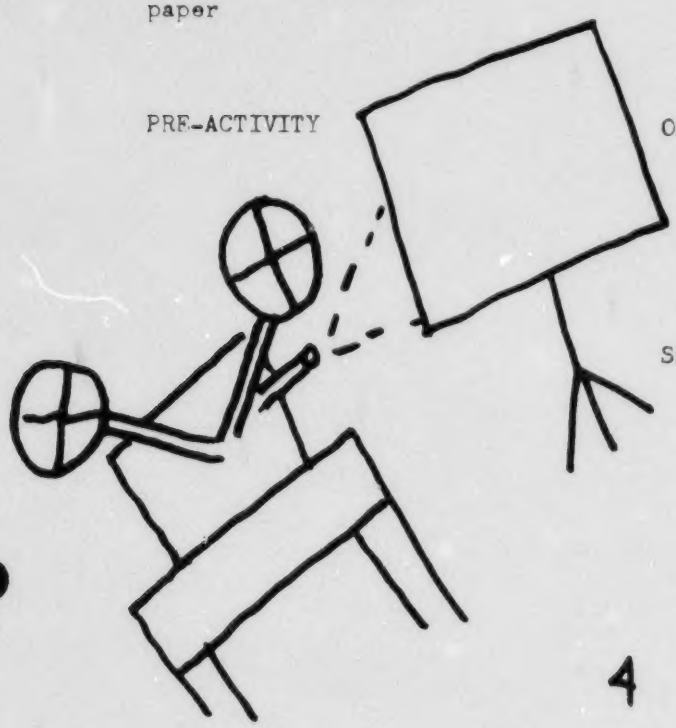
LEVEL VI OBJECTIVE:
THE STUDENT WILL UNDERSTAND THAT AIR MOVES.

GETTING IT TOGETHER

MATERIALS

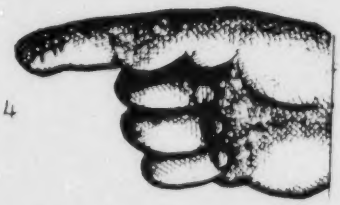
Movie - "Air" EF 4
(Gate)
Projector; paper; paint; string; crepe paper

TEACHER BACKGROUND INFORMATION



PRE-ACTIVITY

Organize for the movie.



Show movie - "Air" EF 4

POST-ACTIVITY

Discussion of film.

Using paint to make a design, have each child make, and then fly, a kite to demonstrate the movement of air.

RESOURCES

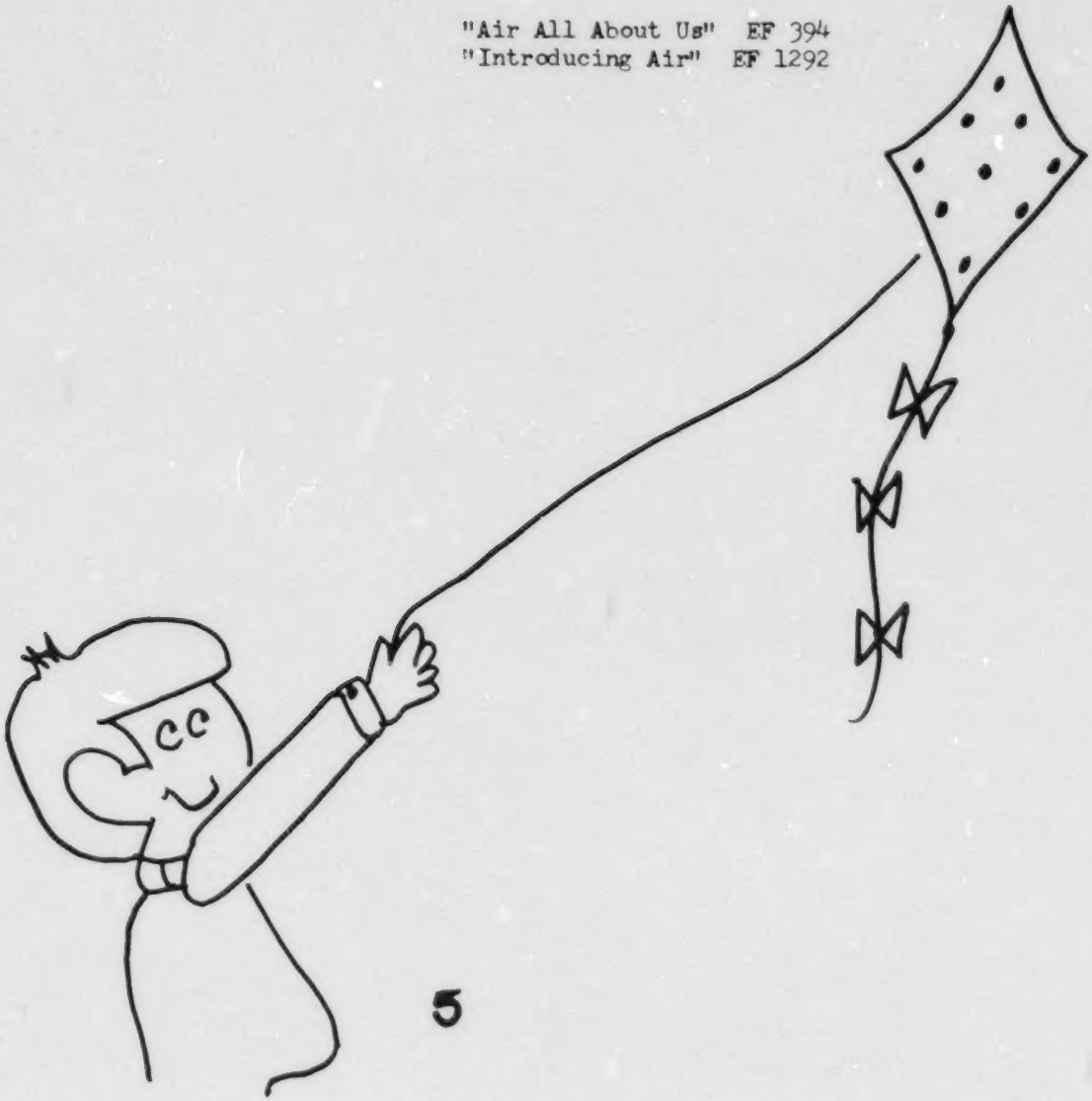
Student

See attached bibliography

Teacher

Other films:

"Air All About Us" EF 394
"Introducing Air" EF 1292



AIR

Topic: Air - Noise Pollution
Grade: One
Estimated Time:
Subject Areas: Language Arts, Science

LEVEL V OBJECTIVE:

STUDENTS SHALL RECOGNIZE VARIOUS POLLUTION PROBLEMS, THEIR CAUSES AND EFFECTS.

LEVEL VI OBJECTIVE:

THE STUDENT WILL UNDERSTAND THAT CERTAIN NOISES CAN BE CLASSIFIED AS POLLUTANTS.

GETTING IT TOGETHER

MATERIALS

Tape recorder

TEACHER BACKGROUND INFORMATION

Make plans for a field trip if you are planning to go into the community.

PRE-ACTIVITY

Prepare the class for an experiment. Have everyone remain perfectly silent for 3 minutes. Then let the class talk all at one time for 3 minutes. Discuss the contrast. Ask them to think about how often we are not sensitive to the many sounds around us.

ACTIVITY

With a tape recorder, children or teachers record the sounds of the community, school or classroom.

POST-ACTIVITY

List the sounds according to catagories: natural and man-made, loud and soft, necessary and unnecessary. How do the sounds affect animals and humans? What can be done to reduce the disturbing noise?

RESOURCES

Students

See attached bibliography

Teacher

See attached bibliography

AIR

Topic: Air - Pollution
Grade: One
Estimated Time:
Subjects: Lang. Arts, Social Studies, Science

LEVEL V OBJECTIVE:

STUDENTS WILL RECOGNIZE VARIOUS POLLUTION PROBLEMS, THEIR CAUSES AND EFFECTS.

LEVEL VI OBJECTIVE:

THE STUDENT WILL KNOW THAT THE AIR HE BREATHES CONTAINS PARTICLES.

GETTING IT TOGETHER

MATERIALS

Wooded area; leaves on the trees. Pick time when rain has not occured.

TEACHER BACKGROUND INFORMATION

Refer to Lesson One

PRE-ACTIVITY

Discuss with students the ways air is important to our lives. Where do we find air? Can we always be sure of what we're breathing in the air? Why is it hard to tell, sometimes?

Divide group into 5 or 6 students in preparation for the trip.

ACTIVITY

Take a mini-field trip to a nearby wooded area or a nearby tree with leaves. Discuss the feelings of breathing in the air on the way to the site. Let each group remove one leaf. Upon returning to class, or there on the site, wipe the leaf with a tissue and notice the amount of dust.

POST-ACTIVITY

How can we tell if we've breathed in a lot of dust in the air? (Blowing nose, sneezing)

WHY NOT TRY THESE?

SUGGESTED ADDITIONAL ACTIVITIES

1. Choose section of room. Dust part of this section for one week. Leave others undusted. Dust settles - air is cleaned in this manner.

2. Spray a scent into the air. How fast does it travel?

3. Spread VASOLINE over a piece of cardboard and place on outside of windowsill.

4. Show pictures of city scenes where air is visibly polluted. Discuss some of the reasons for this. How would this polluted air affect our bodies?

5. Put a pan of water out in your yard for several days. Boil off the water and see how much dirt is left on the bottom of the pan.

AIR

Topic: Air
Grade: One
Estimated Time:
Subject Areas: Art, Science

LEVEL V OBJECTIVE:

STUDENT WILL RECOGNIZE VARIOUS POLLUTION PROBLEMS, THEIR CAUSES AND EFFECTS.

LEVEL VI OBJECTIVE:

THE STUDENT WILL RECOGNIZE THAT CERTAIN TYPES OF PARTICLES IN THE AIR CAUSE DIFFICULTY IN BREATHING.

GETTING IT TOGETHER

MATERIALS

Pictures of areas experiencing air pollution; paper; pencils; crayons

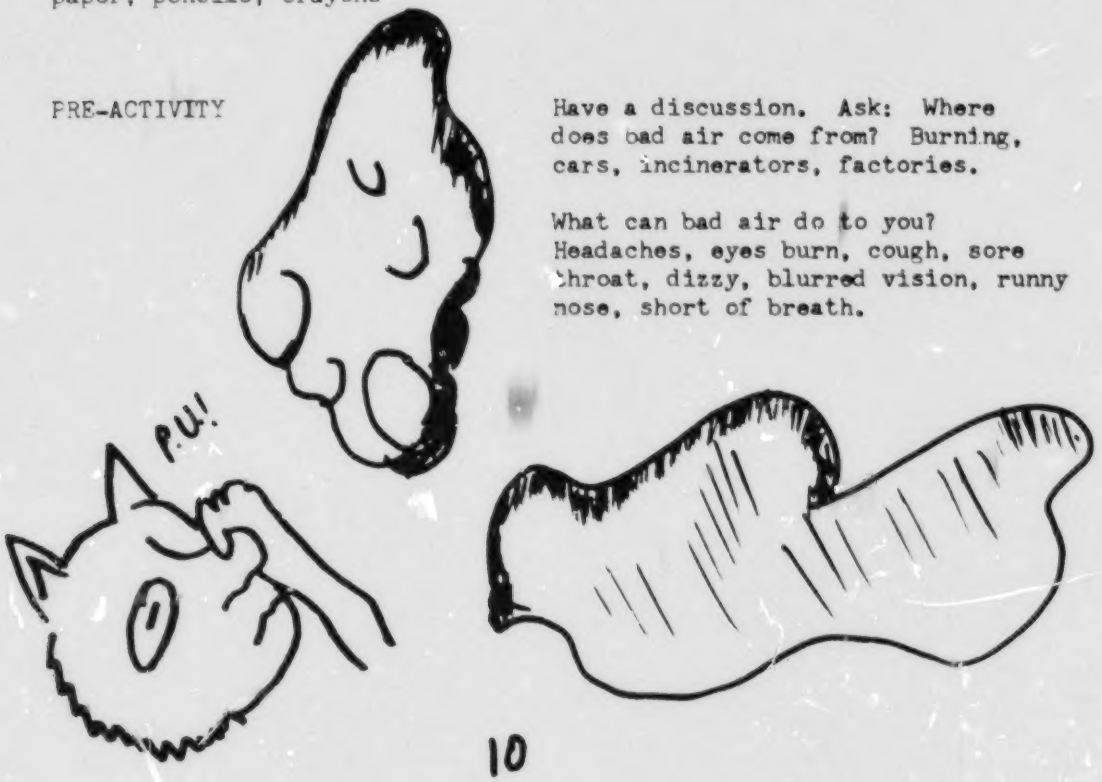
TEACHER BACKGROUND INFORMATION

Refer to Lesson One

PRE-ACTIVITY

Have a discussion. Ask: Where does bad air come from? Burning, cars, incinerators, factories.

What can bad air do to you? Headaches, eyes burn, cough, sore throat, dizzy, blurred vision, runny nose, short of breath.



ACTIVITY

Draw an example of something that pollutes the air and put yourself in to show how this would make you feel.

POST-ACTIVITY

Compare and contrast pictures. Point out which form the children pick most, indication of importance to them.

WHY NOT TRY THESE?

SUGGESTED ADDITIONAL ACTIVITES

Observation of school facilities for burning garbage.

RESOURCES

Student

See attached bibliography

Teacher

Washington Lung Association
(See Resource Sheets)

SUPPLEMENTARY ACTIVITIES

1. Job Cards (See attached sheets)

Make it -- A dictionary of pollution words. Make up your own title for your dictionary.

Show how noise affects plants.

Make a tape recording of sounds made by people and their machines. Now, make a list:

PEOPLE SOUNDS vs. SOUNDS IN NATURE

Go outside - Capture some clean air. Now prove that it isn't.

Tape this: (a game) Record several sounds you hear around your home and school. Play the recording for your friends and let them guess what the sounds are, and where you recorded them. If you like, find the difference between noise and sound.

Let's go - get a vacuum sweeper (with a hose). Tape a facial tissue over the hose. Turn up the vacuum. Switch off after several minutes. What do you see?

2. Draw pictures of houses with chimneys, factories with smokestacks.

3. Dust the top of a table or piano in the morning. Put a book on the top. Check to see the difference at the end of the day - second day - third day.

4. Discuss common uses of air (as in balloons, bike tires), make kites, paper airplanes, windmills.

5. Air expands when heated. Place a balloon on the mouth of a small jar. Heat the jar and observe the balloon.

6. Air - Smell
Find pictures from magazines of things that produce odors: matches, bathroom spray, car and truck exhaust, flowers, barnyard, manure, cooking foods like sauerkraut, gasoline, perking coffee, bubble baths. Make a two section chart: 1. Pleasant odors 2. Unpleasant odors.

7. Let them: Draw and paint pictures about spring and summer activities.
Paint and cut out large figures of children doing spring and summer activities.
Make pin wheels: Of manila paper with crayoned design.
Of manila paper with points and center decorated with colored paper.

8. Make fans: Cut out and decorate two matching ovals, circles, or squares. Insert tongue blade or 10" slat. Staple together or paste. Decorate a strip of manila about 12" x 7" x 8". Fold back and forth in about 3/4" widths to give pleated effect. Tie together at one end.

9. Make wooden boats of scraps of wood obtained at lumber yard. Add paper sails, spools for smokestacks, etc.

10. Listen to a radio at your normal listening level. How much lower can you turn it and still hear it? How much louder can you stand it?

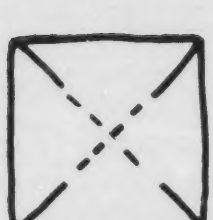
11. Outside look for evidences of air moving such as: the flag blowing, cloud movement, trees swaying, leaves floating down, papers being blown, smoke coming from chimneys, etc.

12. Have each child wet the back of his hand and then turn his hand around until he can feel a breeze. Then he may deduce that even though he can't see the air to tell which direction it's coming from, he can feel the wind.

13. Study the action of the wind outside. Look for places where leaves, scraps of papers, and sediment have been drifted into piles by the wind. Which way was the wind blowing? Was it a heavy wind? Why did the materials and scraps drift where they did? Examine more than one site and compare the drifting.

14. After a wind storm look closely at the earth or snow for the "foot prints" made by the wind. Notice the patterns, direction, and places where there has been a small whirlwind.

15. To demonstrate the fact that air is present even though we can't see it, put several handfuls of soil into a gallon jar. Then fill the jar with water. Air will bubble up from the soil. Ask the children how this air helps plants grow. How does this benefit worms and insects? You can also do this experiment using a porous rock instead of soil. (sandstone)



7.

8.

Tape this: (a game)

Record several sounds you hear around your home and school. Play the recording for your friends and let them guess what the sounds are, and where you recorded them. If you like, find the difference between noise and sound.

Let's go - -

Get a vacuum sweeper (with a hose). Tape a facial tissue over the hose. Turn up the vacuum. Switch off after several minutes. What do you see?

Make it -

A dictionary of pollution words. Make up your own title for your dictionary.

Show how noise affects plants.

Make a tape recording of sounds made by people and their machines. Now - make a list:

<u>People Sounds</u> vs. <u>Sounds of Nature</u>

Go outside --

Capture some clean air - now prove that it isn't

Listen to a radio at your normal listening level

How much lower can you turn it and still hear it?

How much louder can you stand it?

ENVIRONMENTAL BIBLIOGRAPHY AIR

STUDENT

SS AIR
PRESTON

SS LET'S FIND OUT ABOUT AIR
SHARP

SS WHEN THE WIND STOPS
ZOLOTOW

SS AIR AND WATER
PALMER

SS JONATHAN PLAYS WITH THE WIND
GALLANT

PA MUGGIN'S BIG BALLOON
BARROWS

SS AIR IS ALL AROUND YOU
BRANLEY

PA CURIOUS GEORGE FLIES A KITE
MARGARET REY

SS THE MERRY WIND
VASILIU

SS OXYGEN KEEPS YOU ALIVE
BRANLEY

PB GREAT BIG AIR BOOK
SCARRY

TEACHER

551.5 THE WIND
BENDICK

614 OUR DIRTY AIR
ELLIOT

551.5 THE FIRST BOOK OF AIR
KNIGHT

551.5 THE AIR ABOUT US
PARKER

530 WHAT IS AIR?
PILTZ

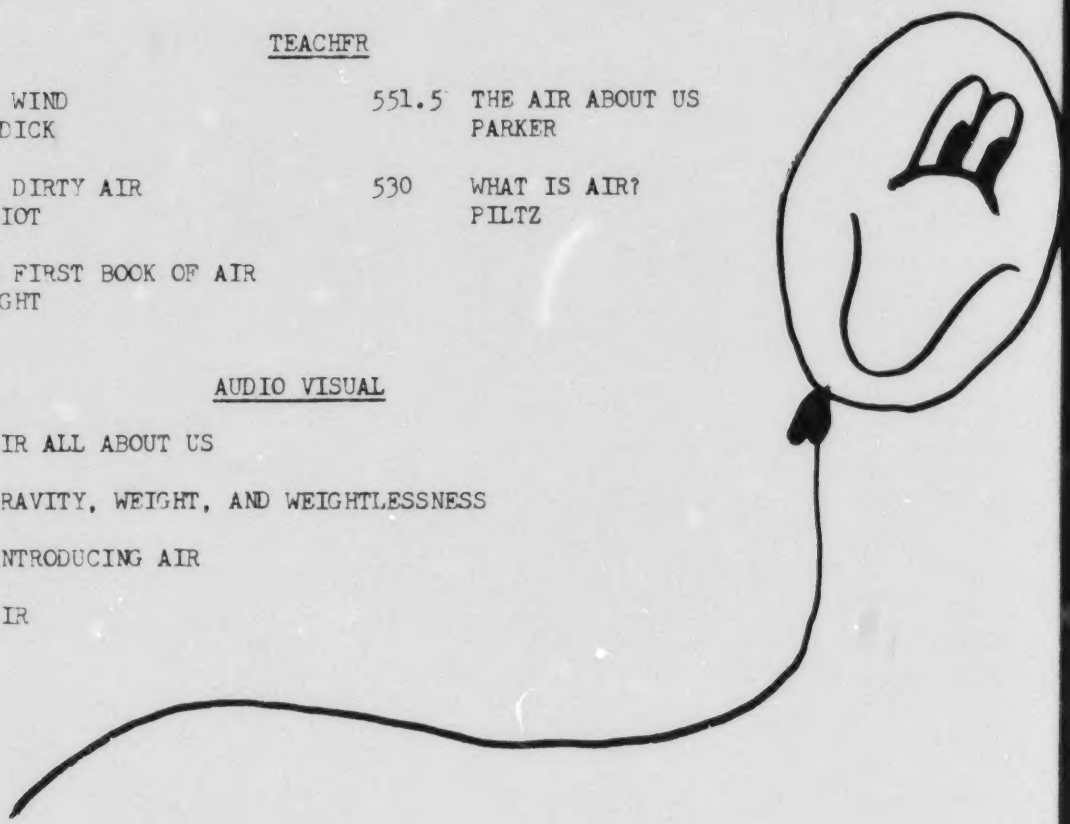
AUDIO VISUAL

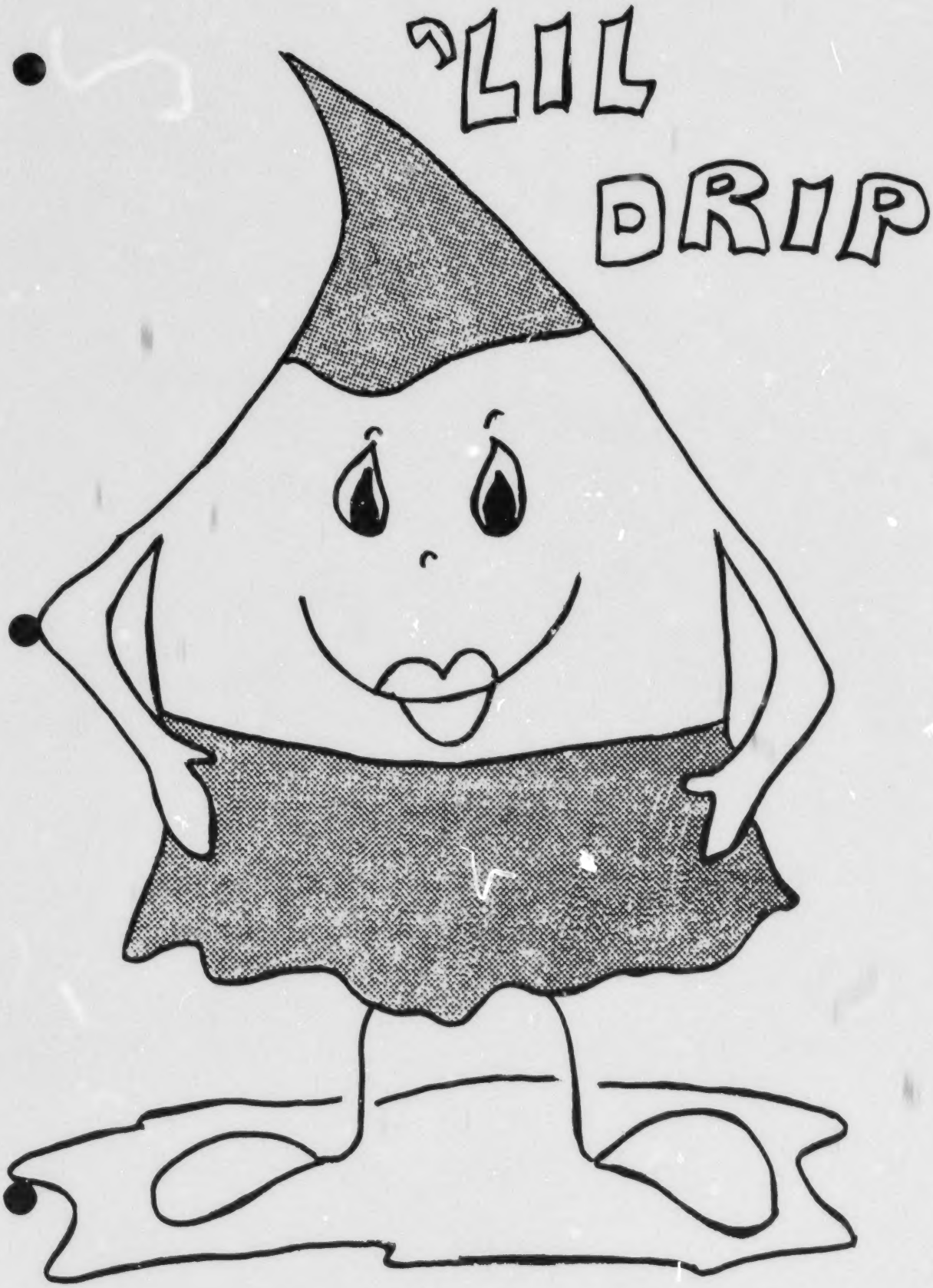
EF 394 AIR ALL ABOUT US

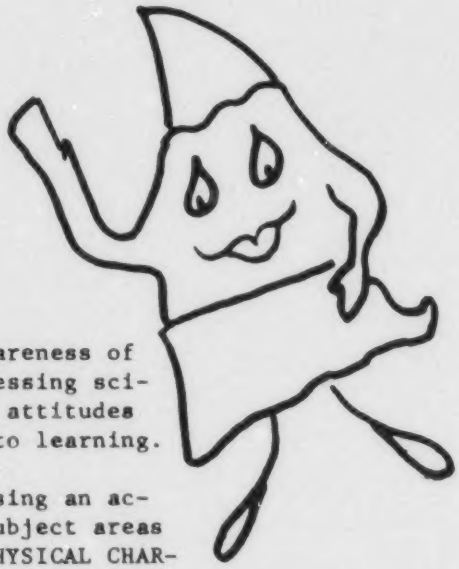
EF 233 GRAVITY, WEIGHT, AND WEIGHTLESSNESS

EF 1292 INTRODUCING AIR

EF 4 AIR




'LIL
DRIP



The intent of this unit is to develop awareness of basic deductive and inductive skills stressing scientific methods of study, development of attitudes and perceptions, and a process approach to learning.

In dealing with our objectives, we are using an activity oriented approach. Each of our subject areas has been divided into three parts, the PHYSICAL CHARACTERISTICS of the subject, MAN'S USE, and an awareness activity focusing on MAN'S MISUSE. Each lesson is designed to be complete in itself.

WATER

Water is an obvious part of our lives and for that reason, it is often taken for granted. It is important that young students not only learn of the basic characteristics of water but apply positive environmental principles towards water use in their everyday life.

We visualize 'Lil Drip as a creative character that may help tie in the various activities that follow. She may act as a visual aid in flannel on your flannel board or as a means of introducing lessons, related poems, films, etc. The larger picture of 'Lil on the next page could be made into a ditto and serve as a cover on a Water Booklet for each student. You may want to adapt her into a puppet character.

We know you'll have a lot of good ideas, too. We'll be anxious to have you share them with us during our inservice get togethers and will want to include them in our revision.

'LIL
DRIP

WATER

Topic: Water
Grade: One
Estimated Time:
Subject Area: Science

LEVEL V OBJECTIVE:

THE STUDENT WILL IDENTIFY PHYSICAL CHARACTERISTICS AND COMPOSITION OF WATER SUCH AS TEMPERATURE, MINERAL CONTENT, OXYGEN CONTENT (O_2), pH.

LEVEL VI OBJECTIVE:

THE STUDENT WILL UNDERSTAND THAT AN OBJECT FLOATS IN WATER WHEN ITS DENSITY IS LESS THAN THE LIQUID AROUND IT.

GETTING IT TOGETHER

MATERIALS

Tall glass, water
tablespoon, table
salt, fresh egg

TEACHER BACKGROUND

Water is essential to life and is helpful to man. From the smallest mountain stream, through swamps, lakes, rivers and oceans, every type of water area supports fascinating living creatures, each interdependent in the life chain.

There is an increasing awareness of the need to understand and preserve all of these water habitats and the living things associated with them. Pure water is seldom found in the environment except distilled water. Water can become polluted naturally. Raindrops pick up solid particles (dust, soot, plant pollen, etc.) and gases from the air are dissolved in them. After a rain, water picks up impurities from minerals in the ground.

TEACHER BACKGROUND (cont.)

Many everyday living activities can cause water to become polluted by detergents, human wastes, industries, and fertilizers. A fact to remember is that water is limited in our atmosphere and is constantly being recycled. Deterioration of any water environment will be reflected by many types of interdependent living things.

PRE-ACTIVITY

Gather materials and divide the class into work groups.

ACTIVITY

Fill the glass half full of water. Break the egg carefully into the water. Observe what happens. Dissolve two tablespoons of salt carefully into the water, being careful not to break the egg. Observe what happens.

POST-ACTIVITY

Through discussion of observations, lead students to the awareness of this concept: AN OBJECT FLOATS WHEN ITS DENSITY IS LESS THAN THE LIQUID AROUND IT. Adding salt to the water makes the density of the water greater than the density of the egg.

RESOURCES

STUDENT

See attached Bibliography

TEACHER

See attached Bibliography

WATER

Topic: Water
Grade: One
Estimated Time:
Subject Areas: Language Arts, Science
Math

LEVEL V OBJECTIVE:
STUDENT WILL IDENTIFY PHYSICAL CHARACTERISTICS AND COMPOSITION OF WATER SUCH AS TEMPERATURE, MINERAL CONTENT, OXYGEN CONTENT (O_2), pH.

LEVEL VI OBJECTIVE:
THE STUDENT WILL UNDERSTAND THAT AN OBJECT FLOATS IF ITS SPECIFIC GRAVITY IS LESS THAN THE LIQUID AROUND IT.

GETTING IT TOGETHER

MATERIALS

Small size paper bags, one for each team; flat cake pan, may be obtained from cafeteria

TEACHER BACKGROUND INFORMATION

Refer to Lesson One.

PRE-ACTIVITY

1. Play a word game with the children where you name a word and they say all the things that they think of when they hear that word. You can list them on the board or a large chart. Suggested words - play, run, and swim. This last word should bring up the word float, which is the key word for this lesson.

2. Divide your class into teams. In kindergarten it works best to divide into four groups - possibly one for each work table. The captain or leader has charge of the paper bag. If it is damp out, a plastic bag will work just as well.

3. Review the rules about not picking objects that are growing. You might want to discuss why not.

4. Practice counting to three for the very slow ones, if it is the beginning of the year.

ACTIVITY

1. Each child is to find three different small objects and come back to the captain to place in the bag. OBJECT: Find things that will float. The captain is to collect small sticks for counting, while the team is searching. Ten sticks are usually ample.

2. Allow about 15 minutes for the collection. As soon as a child has found 3 different objects, he sits down with his group. (earlier ones may help find sticks and break them into fairly uniform lengths.)

3. After 15 minutes, the children assemble around a puddle (or the pan of water if no puddle is available), in their groups. One group at a time "test" their objects to see if they float. If it floats they put a stick in their pile; if it doesn't, a stick is taken away. Have the children name as many of the objects as possible. Count the total sticks at the finish. The team with the least cleans out the puddle, or pan, and disposes of the objects in a waste can.

POST-ACTIVITY

1. Have the children list as many of the objects that they can remember that floated.

2. Have the children list the objects that did not float.

3. Why did some float and others not?

4. Heaviness? It is because of "specific gravity." (Explanation: If the specific gravity of an object is less than water, it will float; if it is greater than water, it will sink.) Young children love to use large and scientific words.

5. Suggest (with mother's approval) that the next time they take a bath or help with dishes, they check the specific gravity of objects in their home, and report to the class their findings.

6. Discuss why they used a shallow puddle or pan to try their experiment and not a creek or pond. The importance of keeping our water uncluttered.

7. A chart or bulletin board may be made. Divide in half and entitle the board "Specific Gravity." One side is for lesser than wate , the other side for greater than water. The children may either attach the "real" objects (with their name attached) or they may find pictures in magazines.

RESOURCES

STUDENT

See attached Bibliography

TEACHER

Film:
"Water for all Living Thngs" EF 373

WATER

Topic: Water
Grade: One
Estimated Time:
Subject Area: Science

LEVEL V OBJECTIVE:
STUDENT WILL IDENTIFY PHYSICAL CHARACTERISTICS AND COMPOSITION OF WATER SUCH AS TEMPERATURE, MINERAL CONTENT, OXYGEN CONTENT (O_2), pH.

LEVEL VI OBJECTIVE:
THE STUDENT WILL DETERMINE DIFFERENCES IN WATER TEMPERATURE AND FORM.

GETTING IT TOGETHER

MATERIALS

Thermometer; ice cubes; water; container; hot plate

TEACHER BACKGROUND INFORMATION

Freeze water or (see pre-activity)

PRE-ACTIVITY

Have children fill ice cube trays to freeze.

ACTIVITY

1. Teacher will use job cards to do class activities or various group activities (cards attached).
2. Use your own creativity.

POST-ACTIVITY

Discussion of observations.

RESOURCES

STUDENT

See attached Bibliography

TEACHER

Film:
"Thermometers" EF 197

CREDIT

Lander Conservation Center
Lander, Wyoming 82520

Find out which freezes faster,
hot or cold water.

Fill a container with water.
Freeze it.
What happens?
Why?

Try doing it as fast as you can.

Keep an ice cube as long as you can in your classroom.

Have a contest with your buddy to see who can save it the longest.

Heat some ice cubes

How is the form of water changed?

See how hot you can make water.

Stuff:
A thermometer
A heat source

How cold can you make water.

WATER

Topic: Water
Grade: One
Estimated Time:
Subject Areas: Science, Math, Art

LEVEL V OBJECTIVE:

STUDENTS WILL COMPREHEND RELATIONSHIPS AMONG ALL ORGANISMS AND THEIR NON-LIVING ENVIRONMENT.

LEVEL VI OBJECTIVE:

THE STUDENT WILL KNOW THE IMPORTANCE OF WATER USAGE IN DAILY ACTIVITIES SUCH AS BATHING, WASHING DISHES, ETC.

GETTING IT TOGETHER

MATERIALS

Paper, pencil, crayons

TEACHER BACKGROUND INFORMATION

PRE-ACTIVITY

Discussion of the importance of water in our lives.

ACTIVITY

Have the child tally each time he uses water during the school day.

POST-ACTIVITY

Draw a picture of the way they use water in the summer and winter (or other seasons).

WHY NOT TRY THESE?

SUGGESTED ADDITIONAL ACTIVITIES

1. Have the child make a tally sheet at home, of the family uses of water.
2. Expand the discussion to farms and industries that also need water.
3. Show film: "Water for the City" EF 461.

RESOURCES

STUDENT

See attached Bibliography

TEACHER

See attached Bibliography

WATER

Topic: Water
Grade: One
Estimated Time:
Subject Areas: Science, Math

LEVEL V OBJECTIVES:

STUDENTS WILL UNDERSTAND PROBLEMS IN CONTROLLING USAGE OF ALL RESOURCES.

EACH CHILD WILL PERCEIVE HIMSELF AS A PART OF NATURE AND WILL DESIRE TO LIVE IN HARMONY (DYNAMIC BALANCE) WITH THE REST OF NATURE.

LEVEL VI OBJECTIVE:

THE CHILD WILL KNOW HOW MUCH WATER IS WASTED FROM A LEAKY FAUCET.

GETTING IT TOGETHER

MATERIALS

Measuring cup, faucet

TEACHER BACKGROUND INFORMATION

A leaky fauct does not seem like much of a problem until you begin to sense how much water each person uses daily and how quickly the drops from a leaky faucet add up. Here are some facts that will give you an idea of the enormity of the problem.

Each person uses approximately 60 gallons of water each day. This includes water for drinking, washing, and cooking. Add to this the water needed to run a washing machine (30 gallons) or a dishwasher, or how much water is used in flushing a toilet (5 to 10 gallons) or the water needed to supply electricity to your home. Add to this the water used in industry to provide us with many products we use daily (40,000 gallons to make steel for one car) and all of a sudden, water takes on a new significance.

PRE-ACTIVITY

Discuss the ways that water can be wasted during the day.

ACTIVITY

Create a leaky faucet if one does not exist. Put measuring cup under leak and leave there for 5 minutes. Check to see how much you have.

POST-ACTIVITY

Project how much water would leak in a half-hour, in an hour.

RESOURCES

STUDENT

See attached Bibliography

TEACHER

Film:
"We Use Power" EF 428, for additional ideas for conserving water.

WATER

Topic: Water
Grade: One
Estimated Time:
Subject Areas: Science, Social Studies

LEVEL V OBJECTIVE:
STUDENTS SHALL RECOGNIZE VARIOUS POLLUTION PROBLEMS, THEIR CAUSES AND EFFECTS.

LEVEL VI OBJECTIVE:
THE STUDENT WILL RECOGNIZE PROBABLE CAUSES OF POLLUTION IN A POLLUTED STREAM, SUCH AS DIRT, OIL, SOAP, ETC.

GETTING IT TOGETHER

MATERIALS

Water glass containing clear water; water glass containing greasy water (sweepings from the floor plus a little oil from the custodians grease can); at least two white pipe cleaners.

TEACHER BACKGROUND INFORMATION

PRE-ACTIVITY

1. Hold up glass of clear water and ask: What do you think this is? (Clear water)

2. Hold up glass of dirty water and ask: What do you think this is? Which glass would you like to drink?

3. Introduce the word "pollution". Explain that water is said to be polluted when it contains something that doesn't belong there.

PRE-ACTIVITY (cont.)

4. Which glass is polluted? Have labels ready to place in front of the glasses of water. Let child place the labels in front of the glasses on the table.

5. Have a child insert a clean pipe cleaner into a glass of polluted water.

6. Blindfold a child and have him smell each glass. See if he can tell which one is polluted.

7. Which kind of water would you like to play and swim in? Why?

8. What kind of living things make their homes in water? (Plants and animals)
   A. Do you think that fish and plants could live in greasy, dirty water? Explain that fish and plants must have air present in the water in order to live. Trash and grease use up the air.

ACTIVITY

1. Take the children to a polluted stream in the area. Have them look for litter along the way. Ask how dirty, trashy streets can pollute our streams (rain water carries waste into streams and rivers).

2. After observing the polluted stream, ask them why they think it has become polluted. Take a sample of the polluted water to bring back to the classroom.

3. Take the group to a well-managed farm pond. This may need to be a separate trip on another day. Have them look for beautiful things. (If we were to have a picnic, what would we do with our trash?) Take a sample of water from the clean pond for the classroom.

POST-ACTIVITY

1. Show pictures from SCS or water control agency showing:
   A. Polluted stream showing dead fish.
   B. Clear stream of water.
   C. People fishing in well-managed farm pond.
   D. Water recreation.

2. Have children select pictures showing water pollution.

3. Discuss the clean water pictures and what is good and beautiful in each.

4. Have children look for ways that people use clean water.

5. Keep a record of how many times they turned on a water faucet in one day. Record the totals for the class.

6. List the reasons why people, plants and animals need clean water. List ways you can help to keep the streams and lakes around your community clean.

7. Make a scrapbook of pictures showing how people, animals and plants use clean water.

WHY NOT TRY THESE?

SUPPLEMENTAL ACTIVITIES

1. See attached chart.

2. What are the different forms of water?

   A. Discuss the terms solids, liquids, and gas.

   B. Show how water may be transformed to a solid (ice) by placing a half filled test tube of water in a beaker of chipped ice and rock salt.

   C. Demonstrate the generating of steam from a kettle or otner container with a limited opening. Take any cold object or surface and hold it over the steam escaping from the container. Hold it there for several seconds. What happened to the cold surface? Discuss.

      (NOTE: Be extremely cautious about allowing anyone to place his hand over the escaping steam. Serious burns may result. This should be done only under the teacher's immediate supervision.)

3. Put a pan of water in the sun and another in the shade. Measure how deep the water is on various days. Discuss the effects of sunny versus cloudy days. How does this effect the amount of water in the pans?

RESOURCES

STUDENT	TEACHER
See attached Bibliography	See attached Bibliography

CREDIT: USDE - Outdoor Education, Primary Resource Guide, Grade 1-3, U.S. Department of HEW, Office of Education.

WATER

ENVIRONMENTAL BIBLIOGRAPHY

STUDENT

PB BENJAMIN DILLEY'S THIRSTY CAMEL
JOLLY ROGER BRADFIELD

SS LET'S FIND OUT ABOUT WATER
SHARP

PB PETE'S PUDDLE
JOANNA FOSTER

HS JEFF AND MR. JAMES' POND
MEEKS

SS AIR AND WATER
PALMER

PB PLINK, PLINK
ETHEL AND LEONARD KESSIER

SS THE CLEAN BROOK
MARGARET BARTLETT

SS WHERE THE BROOK BEGINS
MARGARET BARTLETT

SS SPLASH AND TRICKLE
IVAH GREEN

SS THE GOOD RAIN
ALICE E. GOUDEY

SS FLOATING AND SINKING
BRANLEY

SS SCIENCE IN THE BATHTUB
REBECCA B. MARCUS

PB IF ALL THE SEAS WERE ONE SEA
DOMANSKA

SS FROM ONE DROP OF WATER
NELSON

SS LIVING SCIENCE: AIR AND WATER
PALMER

SS RAINDROP SPLASH
TRESSELT

TEACHER

551.4 THE FIRST BOOK OF WATER
SMITH

364 BOY SCOUTS OF AMERICA
(SOIL AND WATER CONSERVATION)

500 THE HOW AND WHY WONDER BOOK
OF AIR AND WATER
KEEN

551.4 THE RIVERS
ROSS

551.4 WHAT IS WATER?
HAGAMAN

574 A TALE OF A POND
KANE

AUDIO-VISUAL

EF 354 LIVING THINGS IN A DROP
OF WATER

EF 199 RAIN

EF 1165 RAIN SHOWER

EF 373 WATER FOR ALL LIVING
THINGS

Hi!
I'm
Less
Litter
Help Me "Bag The Bug"

LITTER

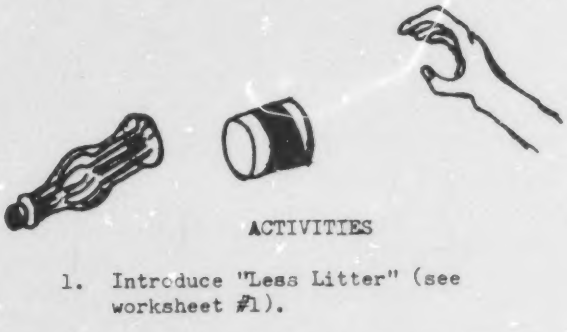
Topic: Environmental Awareness Activities
Grade: 1 and 2
Subject Areas: Art, Soc. Studies
Language Art

LEVEL V OBJECTIVE: The student will perceive himself as part of nature and will desire to live in harmony (dynamic balance) with the rest of nature.

LEVEL VI OBJECTIVE: The student will know various litter pollutants in the local environment such as bottles, cans, and paper.

MATERIALS

Various materials-check out the individual activities.



ACTIVITIES

1. Introduce "Less Litter" (see worksheet #1).
2. What's wrong with these pictures? (See worksheet #2).
3. Distribute and talk about "Earth" coloring book. (See attached master copy).
4. Recycling Activity:
   Collect bottles and other glass containers. Plan a field trip to a recycling center where youngster can view the containers being weighed and dumped into bins before they are crushed and melted down for reuse.
5. Encourage students to recycle their lunch sacks instead of throwing them away each day.
6. Encourage reuse of wrapping paper for gifts.

7. Set up "Paper Recycling" corner in the room. Encourage conservation by a conservative use of paper. In the recycling corner, paper can be stacked for use as scratch paper, drill work, art projects, etc. Teacher can consider using backs of ditto sheets.

8. How can a newspaper be used? Most people read the paper and throw it away. Are there any alternatives?

9. In what ways do we waste paper through the use of paper napkins, tissues, paper plates and paper cups?

10. Collect and compare pictures of attractive yards and cluttered yards. How do we personally affect land use?

11. Introduce your students to WOODSY, the Forest Service Owl. He is a new character whose main role is to remind people to take care of the environment. You'll find him on posters and in the newspaper along side of his slogan, "GIVE A HOOT! DON'T POLLUTE!" Many activities can be done relating back to Woodsy. Create posters showing how you can give a hoot. Learn a song about Woodsy. (See attached sheet #4).

12. Litterbug Game: Each child finds something in his desk he no longer wants. One child will drop his litter either inside or outside. Have a few more do the same. Discuss the change that took place. Next step-Clean up. Put the litter in trash cans. (Encourage high school ag or art classes to design attractive litter containers).

13. Litter Bug Bulletin Board: Draw the outline of a huge bug. Children go on a "pick-up litter" walk. When they come back, glue the litter found to the "Litter Bug".

14. Make individual litter bags with slogans in art class. Use them for pick-up at school or the family car.

15. Role Playing-the teacher will choose two individuals or groups. One will be called the LITTERBAGS and the other the LITTERBUGS. She may ask a Litterbug to eat a piece of candy and drop the paper on the floor. Litterbags will be asked to pick it up. Then change roles. Have the groups talk about their behavior and how they felt about their role.

16. Litter game-Divide the group into three sections of DETECTIVES. One group will go to the principal and janitor in an effort to find out if these people feel that littering inside the school is a problem. The second group will visit 3-4 classrooms to find out if they have litter problems. The third group will remain in the classroom and pick up the litter, noting where most is found. The three groups will meet and report their findings.

17. Read about "Smokey, the Bear." Let student draw his picture and write a story.

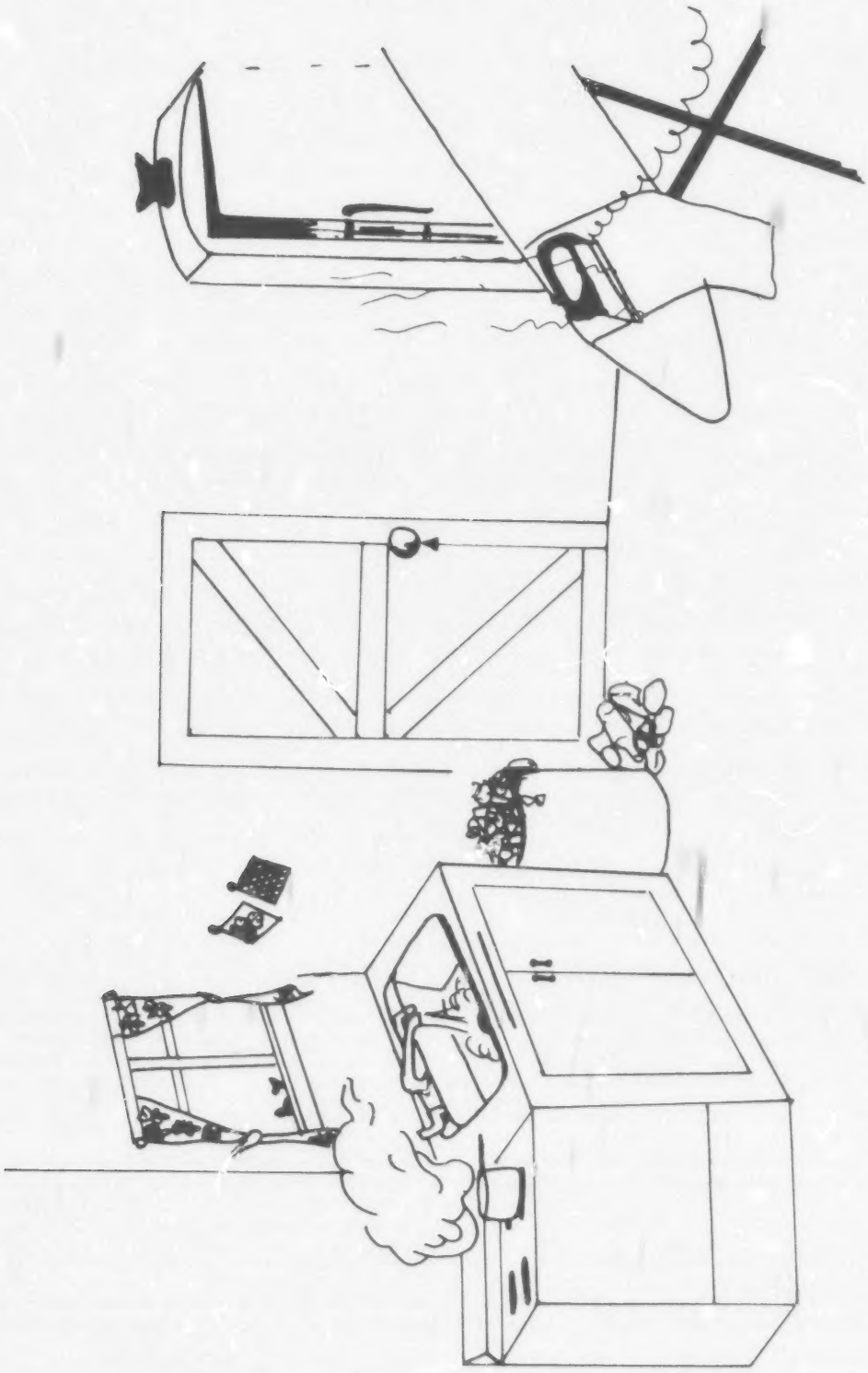
18. Channel 9 is broadcasting a television series, weekly, for grades 1 and 2 called WORKING TOGETHER. It emphasizes many environmental concerns while exploring different jobs that people do in various parts of the state of Washington.

19. Forest Fires: Draw what someone did that started a forest fire: matches, unattended fire, cigarettes, etc. Draw trees burning. Draw the results: blackened stumps, wildlife looking for new homes, etc. Children can also color and discuss #5 and #6 worksheets.

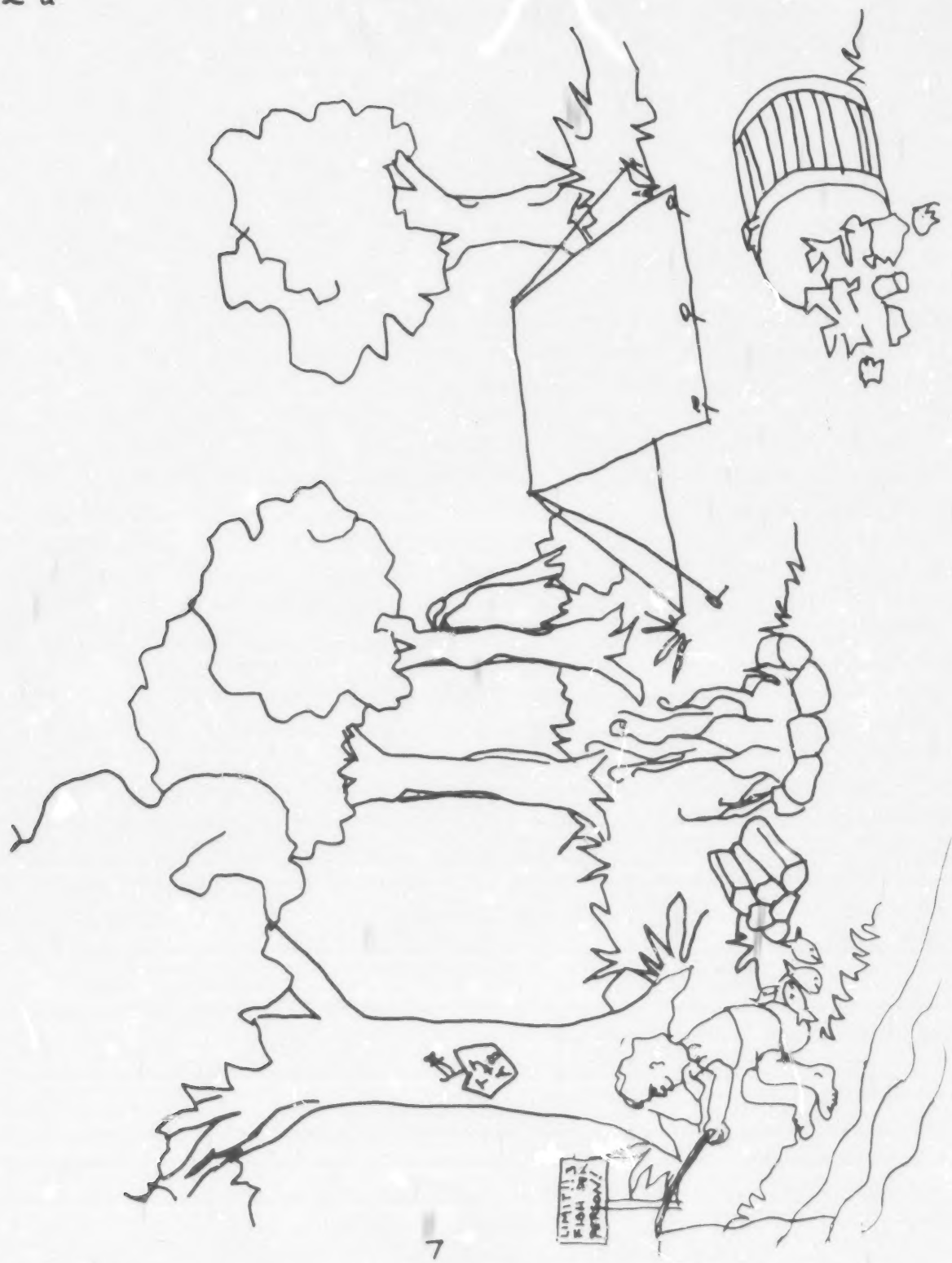
20. The following picture of WOODSY could be used for a bulletin board idea.

#1

#2



#2 a



#3 The EARTH

"We Live Here"

RECYCLED PAPER

Littering

Buried in Litter "

Ocean Beaches

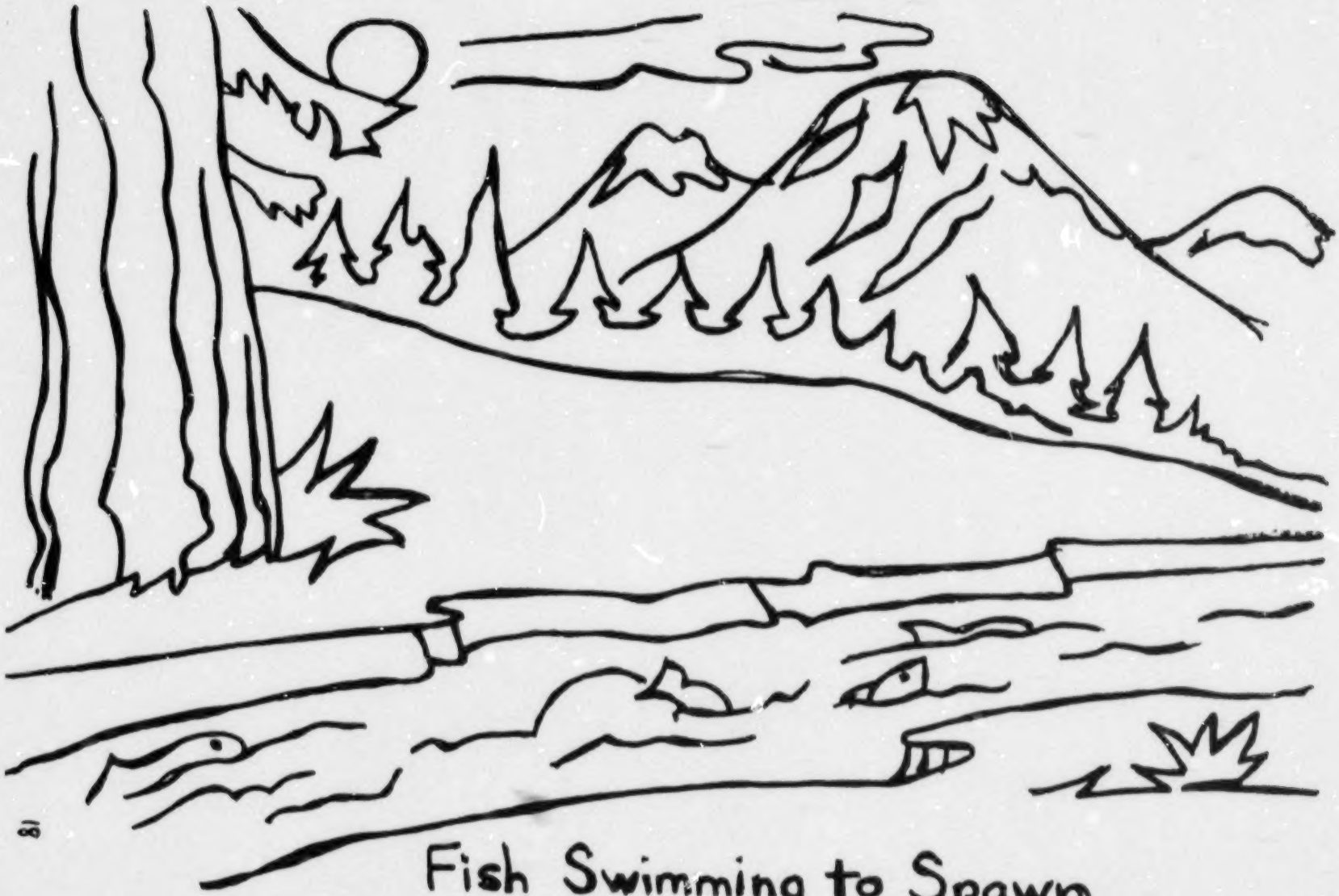
Oil Spill Victims

Logging

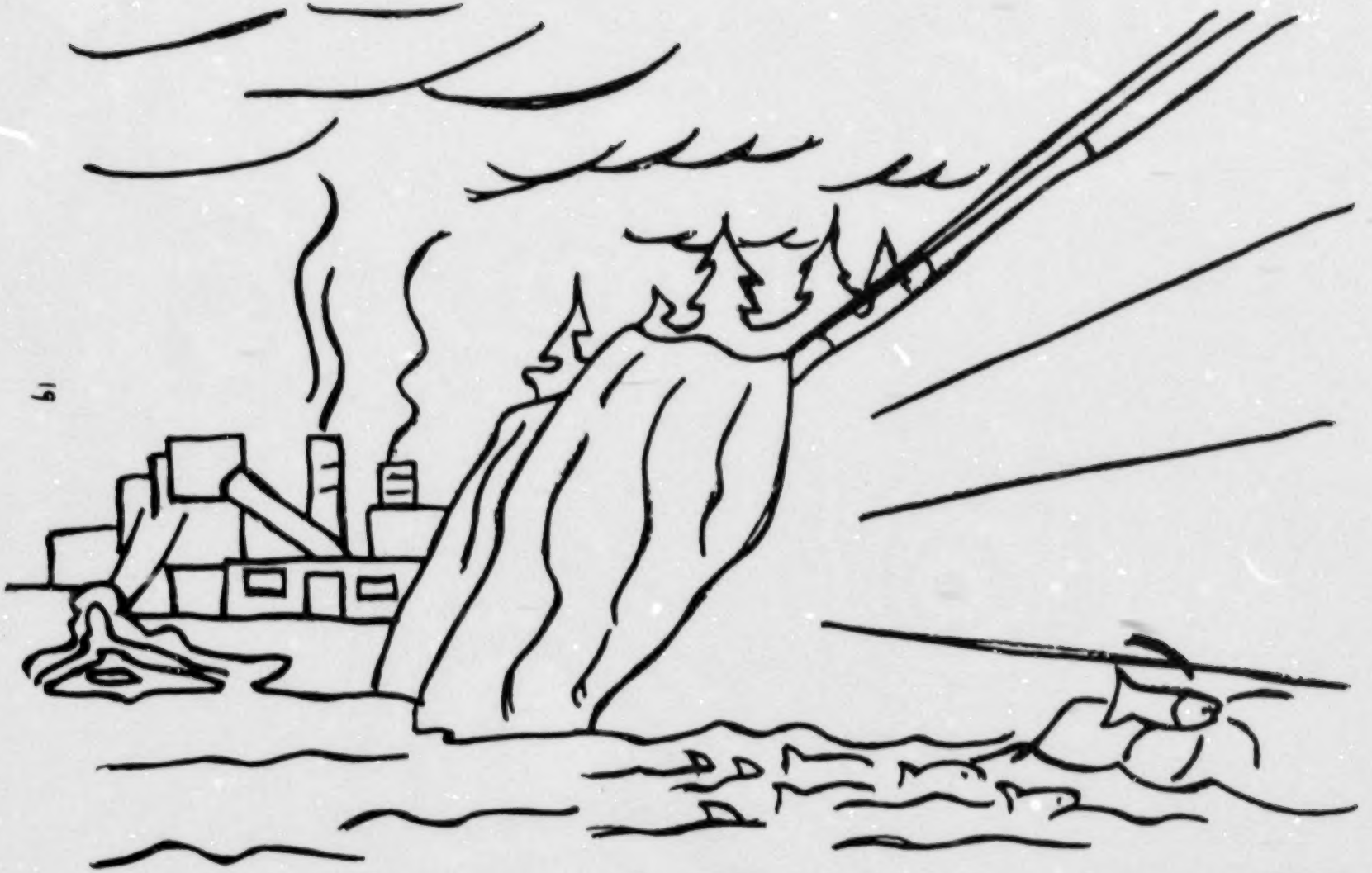
Bad Forestry

Streets for People

Streets for Cars



Fish Swimming to Spawn



Stopping the Fish

No Room to Play

Room to Play

drawings by
GREG WORTHING

coordinated by
BOB SWANSON and
CLAUDIA ANDERSON

THE EARTH - "We Live Here" is a public service project of the Environmental Affairs Agency and the Political Education Commission of the University of Washington (543-8700).
Distributed through the cooperation of the Washington State Department of Ecology.

Printed on 100% recycled/recyclable paper

#4

GIVE A HOOT! DON'T POLLUTE
(Tune: Old MacDonald Words: Nancy Wells, Lynn Severance)

Woodsy is a forest owl.
(Rooty, toot, rooty toot, toot, toot, toot).....use a kazoo or a kazoo sound
There's just one thing that makes him scowl.
(Rooty toot, rooty toot, toot, toot, toot)
A litter bit here,
A litter bit there,
Here a bit, there a bit, everywhere a litter bit,
If you want to make him smile
(Rooty toot, rooty toot, toot, toot, toot)
GIVE A HOOT! DON'T POLLUTE! (SHOUT)

Through the forest you may roam
(Rooty toot, rooty toot, toot, toot, toot)
But don't forget it's not your home
(Rooty toot, rooty toot, toot, toot, toot)
There's a chipmunk here
A nest of birds there,
Here a deer, there a bear, look around everywhere
If you want to help them stay,
(Rooty toot, rooty toot, toot, toot, toot)
GIVE A HOOT! DON'T POLLUTE!

Look upon this forest scene
(Rooty toot, rooty toot, toot, toot, toot)
Don't you want to keep it green
(Rooty toot, rooty toot, toot, toot, toot)
If I do my part
And you do your part
Some of these problems will never start
Join with Woodsy and you'll shout
(Rooty toot, rooty toot, toot, toot, toot)
GIVE A HOOT! DON'T POLLUTE!

#6

PROTECT
OUR HOMES
SMOKEY
DON'T PLAY WITH MATCHES
PREVENT FOREST FIRES!

#5 # Forest fires burn more than trees!

SMOKEY'S FRIENDS DON'T PLAY WITH MATCHES

ENVIRONMENT AWARENESS

BIBLIOGRAPHY

STUDENT

CH A Walk in the City, Dawson.
HS How People Live in the Big City, Stanek and Johnson.
SS The Little Circle, Atwood
M How the West Got Its Name, Koch.
SS How to Be a Nature Detective, Selsam.
M If Everybody Did, Stober
M Glimmer Glinner Glumpkin, Olfson.

TEACHER RESOURCE

300 Nature Sleuths, McCoy.
300 Man and His Resources in Today's World, Mattison
364 Boy Scouts of America, Nature.
500 Research Ideas for Young Scientists, Barr.
500 The Only Earth We Have, Pringle.
580 The Life of a Forest, McCormick.
574 A Guide to Nature Projects, Pettit.

AUDIO-VISUAL

Garbage, CESA 9 Agency.
Litterbug, Avis, BAVI.
The Litterbug, Walt Disney.
Forests, Gateway, BAVI.
Save It or Destroy It, BAVI.
Environmental Awareness, EF 550.
Good Citizens, EF 189.
I'M No Fool With Fire, EF 236.
Hunter and the Forest, Ef 296.

COMMUNITY

Forest Ranger
Janitor
Nursery or Greenhouse

TEACHING CHILDREN OUTDOORS

Guidelines for Conducting a Field Trip

I. PRE-TRIP

A. LOGISTICS

PREPARING TO USE AN ENVIRONMENTAL STUDY AREA

Visit the site yourself first in order to have the best control of the situation and anticipate some of the difficulties or logistics questions that could arise. Examine the area carefully and know your trails. This one step can make the difference between a successful and a chaotic trip.

Is there room for your thirty active children? Are there problems of access? Will the children be able to see? You should obtain permission in advance if you plan to bring your class into a private area.

Organization and planning is essential. How far is it? How long will it take? What is needed (water, lunch, other equipment)?

RULES AND RESPONSIBILITIES

Before the trip, have the children join you in deciding on a set of rules and conduct based on the suggestions listed under the Activity Section. Try to keep the rules "do" rather than "do not." They should include most of the following:

1. Always keep the teacher within sight and sound.
2. Stay behind the leader and at a sufficiently safe distance from one another and dangerous areas. (Proper distance can be measured safely and conveniently by the students in terms of "body length.")
3. Always watch and listen for the teacher's signal to pay attention and gather together.
4. Try to leave the place in as good, or better condition, than you found it. Replace everything you move. Avoid stepping on plants and animals whenever possible.

PREPARE FOR EMERGENCIES

1. What are the health and safety hazards? Include a First Aid Kit and water, if necessary.
2. Remind students to dress properly for the weather and type of activity planned (e.g. hats, raincoats, wading boots, etc.)
3. Children should be warned that they are to avoid picking up any plant or animal about which they are in doubt (see guidelines for collecting specimens). Students should not taste or eat anything without first checking with the leader.
4. If you teach in an area where there are poisonous plants, snakes or insects, be sure that you and the children recognize the poisonous

4. (continued)
species. Then they should also know poison ivy, poison oak and poison sumac and avoid them.

USE OF ASSISTANTS OR PARAPROFESSIONAL AIDES

1. High School Teachers' Aides: If you have a high school teacher aide, why not divide your class in half and plan together to let him/her help in certain phases of teaching outdoors (within sight and sound of your supervision).

   More information about the availability and assignment of high school student teachers' aides for classwork and or field trips may be obtained from the high school Counseling Office in each high school.

2. Intermediate and Junior High School Students: Depending on the time and difficulty of your particular outdoor activity, you can depend upon junior high and even intermediate students to conduct simple 10-15 minute exercises outdoors with small groups of younger students. It is mutually beneficial if properly planned and supervised. Contact the Counseling Office in each school for aides.

3. Parents: Find a parent who is willing to assume an active role in assisting you with learning activities outdoors.

   Also, why not organize parent work parties after school to improve outdoor laboratories for learning on or near elementary school sites?

4. Docent Aide Programs of Community Organizations: For further information, contact your school district's Coordinator of Community Volunteers.

B. LESSON PLANNING

AREAS AVAILABLE FOR USE

A. School Site: Your own school site is rich in opportunities for environmental observation, learning, beautification, and improvement.

When you have seen your own school site, why not schedule a field trip to another school site?

B. Neighborhood Parks: Check your city map and plan a hike to the nearest park or public natural area. What are its unique characteristics and experiences for learning?

C. Special Attractions: Included here are areas such as Marshall Outdoor Laboratory, Chase Lake Bog, State and National Parks and Forests and other public or private areas permitting your use for education.

PREPARE THE GROUP IN ADVANCE

Where to Go

The first prerequisite for a site is that it provide what you want the children to see or do. The closer it is and the easier it is to get to, the better.

First, the teacher must become acquainted with the descriptive features of the area and with its significance. But you should go beyond merely identifying the flora and fauna or the outstanding physical features of the facility. You should take a close, analytical look around the site and decide which of its characteristics are relevant to people and environmental education in terms of your subject or discipline.

When you find something interesting, tie a piece of yarn near to it to help you find it when you want to show it to the rest of the class.

A. Motivation: Discuss the purpose of the trip with the class beforehand. If the children don't know what to look for, they will become bored and restless quickly. If they are absorbed in a problem, they may maintain interest for a long time. You should know what you want the children to look for before you start out, even if it is stated in only the most general terms.

Be prepared to cover at least some of the field trip objectives given to you by your group during your planning sessions.

B. Materials: Take as little as possible with you; the less equipment, the better. What you decide to take depends on the purpose of the trip. You may want the children to have pencils and notepads. Pieces of yarn can serve as markers for interesting discoveries made by the children. Magnifiers, maps or compasses may be very useful, but you risk loss or damage.

If you want to have them along, take as few as you can and put each one in the specific care of a responsible child.

If you intend to collect specimens, you will need appropriate equipment such as plastic bags,etc. You may also want to carry a camera. Collecting on the site is done only with special permission and is generally discouraged; therefore, bottles, nets, traps,

or other cumbersome and often dangerous paraphernalia should be left at home. Students saddled with the responsibility of comprehensive notetaking or with long checklists of things to observe, are often so busy recording and searching for specifics that they rarely get the big environmental picture.

Reference materials to aid in identification are handy, but not so essential that the expedition be weighted down with them.

The on-site experience should be primarily observational. Work best accomplished in the classroom, such as research, calculations, and more academic studies, should not be attempted at the environmental study area, but rather left to the post-site lessons back in the classroom.

The best guides as to what to take along are the activities most suited to the site and the subjects to be studied there. 1) If the on-site experience is to include identification of objects, the pre-site studies should include enough information so that the students know what to look for. 2) If, on the other hand, the on-site experience is to allow the students the excitement of making discoveries, there should be enough guidance - in the form of pertinent questions - to direct their observations toward the given goal. 3) When the environment is to be used as a vehicle for discussion, as in a social science field study, there should be a predetermined understanding of what environmental on-site observations will best motivate the students.

4) A research trip, though open-ended and allowing students a great deal of freedom, should have specific learning objectives.

II. ACTIVITY

A. LOGISTICS

1. Review your student-made rules and define your boundaries with easily recognized landmarks.

2. Explain that this is an outdoor classroom, and that the students should act like students.

3. Ask students to go to the restrooms and get a drink of water before the trip starts.

4. Explain that you will raise your hand to get the group's attention while on the trail. This should serve as an automatic signal for them to stop where they are and remain quiet.

5. When students see or hear the established signal, they should immediately gather around the teacher or in a semi-circle around a point of interest.

6. Whistles are disturbing to children, other groups, and wildlife and should not be used except in an emergency when everyone is called to assemble and return to the school at once. In such a case, the children should be taught to recognize one internationally accepted signal for distress, which is three short blasts on a whistle.

7. There are occasions, depending on the nature of the trip, when the "Buddy System" works just as well on field trips as at the waterfront.

8. Before leaving, have students count off. Before returning from the field, count off again.

9. The teacher or another adult who is familiar with the area should lead the group. Any other arrangement must remain in control (sight and sound) of the adult leader at all times.

10. It is most essential to have a responsible person at the rear at all times.

11. Have students play follow the leader, in single file, when you want to arrange them in a semi-circle around a particular point of interest.

12. Be quiet and move slowly so that you do not disturb the creatures that live there.

13. Watch the length of the line. Don't make the trip a marathon. Move out rapidly at first, and then proceed according to the group's ability. Pace is determined by the slowest walker. Don't make walking a chore. Change the speed of your pace occasionally. It helps to maintain interest.

14. Always remember to stay on the trail, watch your feet, display good outdoor manners and practice good conservation.

15. Keep stops short. When choosing resting places, try to find an interesting site to accommodate the group: A hilltop or hillside with a panoramic view; a stream or lake side; beside a gravel pit; at the dooryard of an abandoned farm;

15. (continued)
at the edge of a forest. Avoid poisonous plants. While resting, check on the condition of your students, as well as cameras, compasses, sketch pads, and exchange of information.

16. Try a different route if a return trip to the starting point is necessary. It helps to keep up interest.

17. Conclude the trip on an interesting note.

B. LESSON PLANNING

TEACHING TECHNIQUES

1. Involve the group actively during the trip as much as possible. Emphasis should be placed on doing. Look for things you have talked about. Emphasize self discovery. Allow time for free exploration. Encourage individual curiosity, investigation and sharing of discoveries with the rest of the group. Encourage use of all five senses whenever possible. Encourage the children to taste, smell, hear and see.

2. Avoid talking about something while on the trail until the entire group has caught up and you have their attention. If possible, try to get the group around you before you start talking.

3. Project your voice. Lift chin up and talk up and over those in front, when the group cannot gather around you but is strung out in a long line. Direct your voice to the last person in the line.

4. Watch your vocabulary, especially natural history and conservation jargon which may be new to the children.

5. Avoid identification for its own sake. Identification and uses of plants and materials helps, but it is not necessary to be a walking encyclopedia. Even Indians did not know all of the oaks, but they knew which acorns were good to eat.

6. Repeat out loud questions directed to you from the group so that everyone hears the question.

7. Talk conversationally. Lecture as little as possible. Ask leading questions to stimulate participation. Answer a child's question with a question which will guide him toward giving the correct answer himself. Don't, however, belabor this technique. Don't bluff. If you can't answer the question, say so, then suggest that the student investigate the resources for an answer.

8. Make it exciting. Be enthusiastic even over something you have noticed before. Remember, to the group it is new. Maintain a feeling of adventuring. Remember that there can be a significant difference between excitement and learning. Excitement should be delicately channeled toward interest. If you become the eyes and ears of your inexperienced charges, you will soon find that your sensitized students will serve as additional eyes and ears for you. They will call to your attention things that you would ordinarily overlook.

9. Prepare for surprises. Take advantage of teachable moments! If a child discovers something exciting, stop what you are doing, if possible, even if what the child wants to share with the group has little or nothing to do with whatever subject you are covering, and allow him to talk about his discovery. You can direct the group's attention back to your subject later. Use tact in keeping the students' facts straight to avoid discouraging self-expression. Avoid getting off on a tangent for very long, unless you all agree that a new study area is more important than the original purpose of the trip.

9. (continued)
So many things that can initiate learning out-of-doors are sometimes overlooked - buds on twigs, a bird with something in its beak, an ant dragging a caterpillar along the ground, the direction in which dandelion fluff is blowing, the position and phase of the daytime moon.

Any single observation can be the beginning of exciting exploration and lead to the joy of further discovery.

Every observation leads to a question: What is inside buds? Why doesn't the bird swallow the worm in its beak? Where is the ant going with the caterpillar? What happens to the dandelion seeds after they blow away?

The most interesting questions are questions that do not have neat, precise answers, but this should not prevent your investigating them anyway. The out-of-doors is so full of interacting things, that answers are always new and interesting and different.

10. Collecting Specimens: The field trip may lay the groundwork for activities you will want to do in the classroom. Collect only those things as are absolutely necessary for such follow-up, because it is important that the children learn good conservation habits.

The basic rule is to leave a natural habitat undisturbed. Replace anything you move. Avoid stepping on plants or animals whenever possible. If an animal is caught and observed, it should be put back where it was found - allowed to "go home."

The field trip should be distinguished from a collecting expedition, which would be better carried out by you alone or with a few selected students.

Make all collections in accordance with the law or other prescribed regulations, and try to leave the place in as good, or better, condition than you found it.

III. POST-ACTIVITY

AFTER THE TRIP - LET THE MEMORY LINGER ON

Some leaders like to have group evaluations before a trip is concluded, or at a later time. In some instances, an evaluation is not necessary.

CREDITS

LEADING CHILDREN IN THE FIELD, U.S. Forest Service, R-6, Portland, Oregon. PUTTING CONSERVATION TO WORK, Teaching Aid #4, August 1965.

MAN AND HIS ENVIRONMENT "Preparing to Use the Environmental Study Area," pps. 16-20, National Education Association, 1970.

LIVING THINGS IN FIELD AND CLASSROOM, "Planning Any Type of Trip," pps. 97-99, Minnesota Math and Science Teaching Project, University of Minnesota, copyright 1969.

SUGGESTIONS FOR OUTDOOR FIELD TRIPS Ernest V. Blohm, Executive Secretary, Michigan Interagency Council for Recreation, Lansing Michigan, April 19, 1966.

TIPS FOR TRAIL LEADERS
Charles Holtzer, Consultant,
Conservation and Outdoor Education,
Colorado Dept. of Education,
September 1968.

RESOURCES, BACKGROUND INFORMATION,

AND SPEAKERS

DEPARTMENT OF ENVIRONMENTAL HEALTH
University of Washington (543-3620)
Tours of facilities for all grade levels.

U.S FOREST SERVICE
Pacific N.W. Region (R-6)
Motion picture films available in Region 6 library, available on loan for educational purposes to schools, civic groups, churches.
Write to: WASHINGTON STATE FILM LIBRARY
Olympia, Wash. 98504 (206-753-3390)

DEPARTMENT OF CIVIL ENGINEERING: Air and Waste Quality Control
University of Washington
Tours and information.

EDMONDS RECREATION AND PARKS
Subject: Park Acquisition and/or Development
Rod Garretson, Dept. Director
Subject: Park Management
Rod Garretson or Don Burton, Park Superintendent
Subject: Recreation Program - Correct Park Usage, etc.
Doug Schafer, Recreation Supervisor

SNOHOMISH COUNTY PUD
Subject: Energy
Dick Downie, Environmental Coordinator
Don Rider, Public Relations

SNOHOMISH COUNTY HEALTH DEPARTMENT
Subject: Nursing
Ann Wilson, Kathy Carrol (259-9386)
Subject: Environmental Health
Sewage - Charles Mangum (259-9473)
Food Programs - includes restaurants, bakeries, itinerant food (circuses, carnivals, etc.), meat markets.
School, Solid Waste, Camping Areas, Mobile Home Courts, Chemical and Physical Health Hazards Unit, Rodent Control - Byron Robertson (259-9499)
Water and Noise - Gary Fraser (259-9499)
Epidemiology Unit - Dr. Luke (259-9473)
V.D. Section

THE INSTRUCTOR PUBLICATIONS, INC.
Subject: Ecology Posters #750
Dansville, NY 14437

WASHINGTON LUNG ASSOCIATION
216 Broadway East
Seattle, WA 98102
Contact: Mr. David L. Chivers, Regional Program Director
For: "Our Polluted Air" Mobile Workshop (one month in advance), various air pollution pamphlets and health information, films also available on request.

EDUCATIONAL SERVICES CENTER
Bill Hamilton (778-8965) or John McAdam (778-8658)
Information and resources

SEATTLE AUDUBON SOCIETY
712 Joshua Green Bldg.
Seattle, WA 98101 (622-6695)

FILMS

Numbers in parentheses immediately following titles indicate lengths of film in minutes. C for color; BW for black and white.

Conservation

A MATTER OF TIME	Conservation Foundation 30 East 40th Street New York, N.Y.
PARADISE POLLUTED	Roy Wilcox Productions 301 Allen Hill Meriden, Conn.
THE PERSISTENT SEED	National Film Board of Canada Canadian Embassy 1746 Mass. Ave. NW Washington, D.C. 20036
WITH EACH BREATH	New York State Air Pollution Control Board 84 Holland Avenue Albany, N.Y.

CONSERVATION AND BALANCE IN NATURE	International Film Bureau 332 South Michigan Avenue Chicago, Ill. 60604
OUR CHANGING ENVIRONMENT	Encyclopedia Britannica Films, Inc. 1150 Wilmett Avenue Wilmett, Ill.
SO LITTLE TIME	USDI Sport Fisheries and Wildlife 710 N.E. Holladay Portland, Oregon
TOWARDS TOMORROW	BBC through British Embassy Washington, D.C.
3 YOUNG AMERICANS IN SEARCH OF SURVIVAL	3M Company Television Production
WILD RIVERS (28)	Modern Talking Picture Service 1212 Avenue of the Americas New York, N.Y. 10036
CLEAN WATERS (20) Free	U.S. Public Health Service Audiovisual Facility Chamblee, Georgia 30005
NATURE'S PLAN (14) $6.00	Encyclopedia Britannica Films 202 East 44th Street New York, N.Y. 10017
IT'S YOUR DECISION - CLEAN WATER (14 1/2)	Association Films 600 Grand Avenue Ridgfield, N.J. 07657
THE RIVER MUST LIVE (21) Free	Shell Oil Company, Film Library 450 North Meridan Indianapolis, Ind. 46204
TROUBLED WATERS (28) Free	U.S. Senate Public Works Committee Room 4204, New Senate Office Bldg. Washington, D.C. 20510
GREAT LAKES INVADER, THE SEA LAMPREY (13 1/2) Free	Bureau of Sport Fisheries and Wildlife 1002 N.E. Holladay Street Portland, Oregon
THE WHOOPING CRANE (14) Free	Bureau of Sport Fisheries and Wildlife

NATIONAL PARKS, OUR AMERICAN HERITAGE (17-c)	Seattle Public Library 4th and Madison Seattle, Wash. 98104
RETURN OF THE BUFFALO (10-BW)	Seattle Public Library
WOODLAND MANNERS (19-C)	Seattle Public Library
LIFE ON THE WESTERN MARSHES (15-C)	Seattle Public Library
LET'S KEEP AMERICA BEAUTIFUL (18-C) $1.50	Richfield Oil Company P.O. Box 75007 Sanford Station, Los Angeles, Calif.
WINGS OVER BLITZEN (39-C)	Bureau of Sport Fisheries and Wildlife 730 N.E. Pacific Street Portland, Oregon 97208

Most of the following films on conservation are available to teachers through their school district, or to anyone through Rarig's Inc., Audio-Visual Sales and Service, 2100 North 45th, Seattle, Wash.

CONSERVATION (10-BW)
TOPSOIL (10-C)
CASCADE MOUNTAINS (20-C)
WATER-FOUNTAIN OF LIFE (30-C)
WATER CONSERVATION (11-BW)
WHAT MAKES RAIN? (10-BW)
CONSERVING OUR NATURAL RESOURCES (18-C)
UNTOUCHED LAND (30-C)
LITTERBUG (8)
CITIES AND SUBURBS: METROPOLITAN (9-C)

Ecology and Enjoyment of Nature

The following films are free of charge. Write Conservation Film Center, P.O. Box 9163, Seattle, Wash. 98119

LIVING RIVER - GRAND CANYON (29-C)
WILDERNESS ALPS OF STEHEKIN (30-C)
GLACIER PEAK HOLIDAY (30-C)
BULLDOZED AMERICA (27-BW)
NORTH CASCADES (35 mm slide show with script)
THE REDWOODS (20-C)
THE MYTHS AND THE PARALLELS (27-BW)
BEACH HIKE (17-C)
TWO YOSEMITES (10-C)
GLEN CANYON (28-C)
WASTED WOODS (15-C)
HELLS CANYON (33 mm slide show with script)

Most of the following films on ecology and enjoyment of nature are available to teachers through their school district or to anyone through Rarig's Inc., Audio-Visual Sales and Service, 2100 North 45th, Seattle,Wash.

THE SEA (26-C)
WORLDS OF DR. VISHNIAC (C)
COLUMBIA FRONTIER (27-C)
WORLD OF LITTLE THINGS (C)
BALANCE OF NATURE (17-C)
WHAT PLANTS NEED FOR GROWTH (10-C)
ECOLOGY (24-C)
LIFE STORY OF THE OYSTER (11-C)
DISTRIBUTION OF PLANTS AND ANIMALS (16-C)
PLANKTON, PASTURES OF THE OCEAN (10-C)
ANIMAL WAR-ANIMAL PEACE (27-C)
OUR MISTER SUN (60-C)
FATHER OCEAN (10-C)
WHY PLANTS GROW WHERE THEY DO (11-C)
CANOEING THE BIG COUNTRY (14-C)
DESERT COMMUNITY (12-C)

YELLOWSTONE: OUR FIRST NATIONAL PARK (15-C)
GRASS BLADE JUNGLE (11-C)
HERITAGE OF SPLENDOR (16-C)
AROUND THE BIG LAKE (17-C)
TRAIL RIDE (20-C)
LIFE IN THE OCEAN (11-C)
SPRING (9-C)
LIFE ON A DEAD TREE (11-C)
CONSERVATION: JOBS FOR YOUNG AMERICA (19-C)
LIFE IN THE OCEAN (11-C)
ANIMALS THAT LIVE IN THE SURF (11-C)
MARSH COMMUNITY (11-C)
THE DESERT (10-C)
ANIMAL LIFE AT LOW TIDE (11-C)
SPRING COMES TO A POND (13-C)
CAVE COMMUNITY (13-C)

WAY OF LIFE (Illustrates predatory tendencies of nearly all animals)	Wash. State Game Dept. 600 N. Capital Way Olympia, Wash. 98501
WILDERNESS TRAIL (14-C)	U.S. Forest Service Regional Office P.O. Box 4137 Portland, Oregon
WILDERNESS ENCAMPMENT (27-C)	U.S. Forest Service Regional Office
NATURE NEXT DOOR (28-C)	Sierra Club 1050 Mills Tower San Francisco, Calif.
AN ISLAND IN TIME (28-C)	Sierra Club
THE GREAT SWAMP (30-C) (Documentary of a national wildlife refuge)	Bureau of Sport Fisheries and Wildlife Office of Regional Director 730 N.E. Pacific Street, P.O. Box 3737 Portland, Oregon
PATTERNS OF THE WILD (27 1/2-C) (Shows that the wildlife of a forest does not merely live in a forest, but as a part of it.)	Bureau of Sports Fisheries and Wildlife
BIRDS AND THEIR MIGRATION (18-C)	Bureau of Sports Fisheries and Wildlife

FOR THE PEOPLE - WILDLIFE REFUGE (22 1/2-C)	Bureau of Sport Fisheries and Wildlife
GREAT BLUE HERON AND THE SNOWY WHITE EGRET (15-C)	Bureau of Sport Fisheries and Wildlife
KNOW THE HAWKS (10 1/4-C)	Bureau of Sport Fisheries and Wildlife
OUR MAGIC LAND (12 1/2-C) (For primary)	Bureau of Sport Fisheries and Wildlife
WATER BIRDS (22 1/2-C) Walt Disney	Bureau of Sport Fisheries and Wildlife

The following films can be rented from National Audubon Society, 1130 Fifth Avenue, New York, N.Y. 10028. Prices range from $5.00 to $11.00. All are 16 mm sound films.

THE BALD EAGLE, OUR NATIONAL BIRD (35-C)
BEAVER VALLEY (32-C)
BIRDS OF THE COUNTRYSIDE (11-C)
BIRDS OF THE DOORYARD (11-C)
THE GOONEY BIRD (20-C)
ISLAND IN DANGER (25-C)
ISLANDS OF GREEN (24-C)
KENTUCKY'S FEATHERED RAINBOW (28-C)
LOOK DOWN (55-C)
A James W. Wilkie Film
THE LOON'S NECKLACE (11-C)
NATURE'S HALF ACRE (33-C)
POISONS, PESTS AND PEOPLE (55-BW)
THE TOUCH OF NATURE (54-C)
THE WINDOW (17-C)
THE WOOD DUCKS WORLD (30-C)
YOUR LIVING HERITAGE (12-C)
VILLAGE BENEATH THE SEA (90-C) ($50.00)

The following 16 mm films must be used in a sound projector. Massachusetts Audubon Society, South Great Road, Lincoln, Mass. 01773.

BEARGRASS GREEK (20-C)
BEAVER DAM (16-C)
GREEN CITY (30-C)
LAND OF THE PRAIRIE DUCK(25-C)
LIFE IN A TROUT STREAM (10-C)
LIFE IN THE WOODLOT (17-C)
MARSHLAND IS NOT WASTELAND (14-C)
OUR WILDLIFE HERITAGE (30-C)
POPULATION ECOLOGY (19-C)
SILENT SPRING OF RACHEL CARSON (57-BW)
THEIR HERITAGE (20-C) Free
WORLD IN A MARSH (23-C)
YOURS FOR A SONG (14-C)

The following films are available from the Seattle Public Library, Main Branch; free upon request.

AMERICA'S LAST FRONTIER (13-C)
LAND OF THE RED GOAT
OLYMPIC RAIN FOREST (10-C)
BETWEEN THE TIDES (20-C)
ALPINE WILDFLOWERS (11-C)
EDIBLE PLANTS OF FIELD AND FOREST (24-C)
FAMILY AFOOT IN THE YUKON (22-C)
MT. RAINER NATIONAL PARK (20-C)
ANIMALS OF ALASKA (11-C)
MARINE ANIMALS OF THE OPEN COAST (22-C)
CONIFER TREES OF THE PACIFIC N.W. (16-C)

FREE AND INEXPENSIVE MATERIALS

The following are good sources for free or low cost informational materials on Population, Conservation and Ecology. Write for information about available materials.

AMERICAN ASSOCIATION OF UNIVERSITY WOMEN
2401 Virginia Avenue, N.W.
Washington D.C. 20037
Resource directory on pollution control - 75¢.
Anti-pollution pamphlets and study guide - 75¢.

AMERICAN FORESTRY ASSOCIATION
919 17th Street N.W.
Washington, D.C. 20006
Pamphlets and bulletins. "You Can Be a Conservationist" by O.E. Randall.

CLEAN WATER
Washington, D.C. 20242
Suggestions about what communities can do to combat water pollution. Free.

CONSERVATION FOUNDATION
1250 Connecticut Avenue N.W.
Washington, D.C. 20036
Variety of pamphlets and articles dealing with the many aspects of ecology.

ENVIRONMENT MAGAZINE
438 North Skinker
St. Louis, Missouri 63130
Monthly publication dealing with effects of technology on the environment, published by Committee for Environmental Information. Student subscription - $5.00 per year.

INTERSTATE PRINTERS AND PUBLISHERS
Danville, Illinois 61832
Bibliography of books and other teaching materials in conservation field.

ISAAC WALTON LEAGUE OF AMERICA
1326 Waukegan Road
Glenview, Illinois 60025
"Clean Water -- It's Up to You," excellent pamphlet on what local citizens can do about water pollution. Free. Monthly conservation newsletter.

LOCAL TUBERCULOSIS AND RESPIRATORY DISEASE ASSOCIATIONS
"Air Pollution Primer"

NATIONAL PARKS ASSOCIATION
1701 18th Street N.W.
Washington, D.C. 20036
Free or low-cost pamphlets and articles on thermal pollution, noise pollution, pesticides, and basic ecology. Excellent.

NATIONAL WILDLIFE FEDERATION
1412 16th Street N.W.
Washington, D.C. 20036
Conservation Directory - a guide to all state and national sources of conservation and environment information. $1.50. Informational packets on ecology and pollution - special packets from elementary to adult level. Excellent. Monthly newsletter.

PLANNED PARENTHOOD, WORLD POPULATION
515 Madison Avenue
New York, N.Y. 10022
Bibliography, film guide and following reprints: "Eco-Catastrophe," by P. Ehrlich; "300 Million Americans Would be Wrong," by D. Lilienthal; "The Human Race Has Maybe 35 Years Left,: by D. Lyle.

POPULATION REFERENCE BUREAU
1955 Massachusetts Avenue N.W.
Washington, D.C. 20036
Good bibliography, source list, and film guide on population. Minimal cost.

PORTLAND CENTER FOR CONTINUING EDUCATION
P.O. Box 1491
Portland, Oregon 97207
Attn: Mr. Lawless
"Observing our Environment, " - $3.00, relating elementary students to our environment.

PROJECT MAN'S ENVIRONMENT
National Education Association
1201 16th Street N.W.
Washington, D.C. 20036
Information on curriculum (K thru 12) environmental study areas.

PUBLIC AFFAIRS INFORMATION SERVICE
U.S. Government Printing Office
Washington, D.C. 20401

PUBLIC AFFAIRS PAMPHLETS
381 Park Avenue South
New York, N.Y. 10016
Pamphlet #421 - "An Environment Fit for People" - 25¢
#403 - "The Battle for Clean Air" - 25¢

SIERRA CLUB
Mills Tower
San Francisco, Calif. 94104
List of publications, pollution, population information, protection of scenic areas.

SUPERINTENDENT OF DOCUMENTS
Government Printing Office
Washington, D.C. 20402
"No Laughing Matter" - book of syndicated cartoons on air and water pollution (70¢). "Primer on Waste Water Treatment" - current and possible future methods of treating sewage and industrial waste (55¢). "Showdown" - picture pamphlet discussing "showdown" for water quality (65¢). "From Sea to Shining Sea" - presentation of environmental situation of U.S. with good bibliography, film list, and resource guide ($2.50).

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
Public Health Service
Bureau of Disease Prevention and Environmental Control
Washington, D.C. 20201

U.S. GOVERNMENT PRINTING OFFICE
Washington, D.C. 20401
Bureau of Census; Bureau of Indian Affairs; Bureau of Land Management; Bureau of Reclamation; Department of Agriculture; Department of Health, Education and Welfare; Department of the Interior; Forest Service; National Park Service; Office of Education; Soil Conservation Service.

WILDERNESS SOCIETY
729 15th Street N.W.
Washington, D.C. 20005
Reports, pamphlets, reprints on preservation and use of our natural heritage.

ZERO POPULATION GROWTH
367 State Street N.W.
Los Altos, Calif. 94022
Newsletters, brochures, ecology leaflets, reprints.

You may also write to your local:
- Chamber of Commerce
- Historical Societies
- Preservation Societies
- State Offices
- State Office of Public Instruction
- State Offices:
  - Agencies of Pollution, Bureau of Fisheries, Fish and Wildlife Service, Wildlife Commission.

PAMPHLETS AND OTHER PUBLICATIONS

A CONSERVATION HANDBOOK - 30¢ Ordway, Samuel H., Jr.	The Conservation Foundation, 1949 New York
OBJECTIVES AND CONTENT OF CONSERVATION EDUCATION FOR AMERICAN YOUTH - 50¢	U. Press, Ohio State University, 1950, Columbus Ohio
MATERIALS FOR TEACHING CONSERVATION AND RESOURCE USE - 35¢	National Assoc. Biology Teachers, Interstate Printers and Pub., Danville Illinois.
RESOURCES FOR A GROWING POPULTION, Seaton, Fred - 25¢	Supt. of Documents, U.S. Govt. Printing Office, Washington, D.C.
THE GLORY TRAIL - One copy free Swift, Ernest	The National Wildlife Federation 1412 16th St. N.W. Washington, D.C. 20036
THE PACIFIC NORTHWEST - $1 Zim, Herbert S.	Golden Press, New York
THE CONSERVATION OF OUR NATURAL RESOURCES, Seaton, Fred - 20¢	Conservation Bulletin 3-9, Supt. of Documents, above
CAREERS FOR WOMEN IN CONSERVATION - Free	U.S. Dept. of Labor, Leaflet 50, Women's Bureau, Washington, D.C.
WATER AND OUR FORESTS AIB-71 - 10¢	U.S. Dept. of Agriculture Forest Service, Washington, D.C.
FORESTS AND THE NATURAL WATER CYCLE K-1 - Free	U.S. Dept. of Agriculture
FOREST AND WATER 0-28 - Free	U.S. Dept. of Agriculture
HOW A TREE GROWS (16 x 12 poster) - 10¢	U.S. Dept. of Agriculture

FOREST REGIONS OF THE U.S.	U.S. Dept. of Agriculture
BIRDS, CN-1 - Free (There is a series of conservation notes number CN-1 through CN-21 available for education.)	Bureau of Sport Fisheries and Wildlife Dept. of Interior Washington, D.C. 20240
ENDANGERED WILDLIFE SERIES - Free (Numbered EWS-1 through EWS-5)	Bureau of Sport Fisheries and Wildlife
SOMETHING ABOUT HAWKS, SA-2 - Free	Bureau of Sport Fisheries and Wildlife
TREES OF WASHINGTON - Free (Extension Bulletin #440)	Cooperative Extension Service College of Agriculture Washington State University Pullman, Wash.
OFF ON THE RIGHT FOOT (A guide to proper wilderness use)	The Wilderness Society 729 15th Street N.W. Washington, D.C. 20005
ACTION FOR CLEAN WATER	The Wilderness Society
THE NEW CONSERVATION	The Wilderness Society
NEW CHALLENGES FOR WILDERNESS CONSERVATIONISTS	The Wilderness Society
A NEW LOOK AT OUR CROWDED WORLD Stewart, Maxwell, #393 - 30¢	Public Affairs Supt. of Documents U.S. Government Printing Office Washington, D.C.
PROGRESS IN THE PREVENTION AND CONTROL OF AIR POLLUTION - 30¢	Public Affairs
VEGETATION OF OREGON AND WASHINGTON (PNW Circular #80) - Free	Pacific N.W. Forest and Range Experimental Station P.O. Box 3141 Portland, Oregon 97208

LOCAL CONTACTS

Local decision-makers responsible for environmental quality:

CITY COUNCILMEN
Cities of Lynnwood, Edmonds and Mountlake Terrace

CITY PLANNING COMMISSIONS

SOUTH SNOHOMISH CHAMBER OF COMMERCE

How do present and future business needs affect planning for a quality environment? Will there have to be changes in business activity in order to solve environmental problems?

SNOHOMISH COUNTY PLANNING DEPARTMENT

What are comprehensive land use plans? How closely are these followed? Who is responsible to see that land use plans are complied with?

SNOHOMISH COUNTY PLANNING COMMISSION

How are Planning Commission members selected? What is their responsibility? How does their work relate to that of the Snohomish County Planning Department? Why is there a Planning Commission and not just a Planning Department? Why are there rezones and other exceptions to land use plans? How are these exceptions obtained?

SNOHOMISH COUNTY HEALTH DEPARTMENT

Environmental Health Division

What does the department have to do with problems of sewage disposal, water supplies (Spada Lake), food establishments, schools, tourist facilities, rodent and insect control, swimming pool and bathing beaches, refuse disposal?

SNOHOMISH COUNTY ENGINEER

What is the role of the County Engineer in making decisions on roads, transportation and other capital improvements in Snohomish County?

CITY DEPARTMENTS OF CITIES OF LYNNWOOD, EDMONDS AND MOUNTLAKE TERRACE

Building Department - What is the purpose of building codes? How are codes enforced? Are there exceptions? Why? How are decisions on exceptions made? What about conflicts between creating and enforcing of codes on the one hand, and protecting property rights on the other? Are there basic principles for resolving such conflicts?

Planning Department - What is the current city comprehensive plan? Where should businesses go? Apartments? Other multiple residences? What about lot sizes, etc.? What power does the Planning Department have? How are exceptions to the comprehensive plan decided? How does a city comprehensive plan relate to the county comprehensive plan? Is there some relating of local to regional planning?

Recreation and Parks Department

SNOHOMISH COUNTY ECONOMIC DEVELOPMENT COUNCIL
This organization is comprised of business and other organizations representatives to study and suggest to local land use decision-makers how area-wide comprehensive planning could take place for economic development of areas like Snohomish Valley.

Contact: Mr. Lloyd Repman, Chairman (Al 2-6236)
Monte Cristo Hotel
Everett, Washington

CITY OF EDMONDS
250 5th West
Edmonds, Wash. 98020
City Engineer, Planning Department, Recreation and Parks, Police Department, Water Department (200 Dayton, Edmonds, Wash. 98020)

ALDERWOOD WATER DISTRICT
City Center
Alderwood Manor, Washington 98036

CITY OF BRIER
City Hall
23303 Brier Rd.
Brier, Washington 98036

CITY OF LYNNWOOD
19100 44th Ave. West
Lynnwood, Washington 98036

CITY OF MOUNTLAKE TERRACE
Mountlake Terrace, Washington 98043

TOWN OF WOODWAY
11422 238th S.W.
Edmonds, Washington 98020

LYNNDALE GARDEN CLUB

LOUISE MARSHALL
16812 36th Ave. West
Lynnwood, Washington 98036
Author and editor of environmental and recreational materials.

SOUTH SNOHOMISH COUNTY COUNCIL ON HUMAN RELATIONS

PORT OF EDMONDS
456 Admiral Way
Edmonds, Washington 98020

SOUTH COUNTY SENIOR CITIZENS CENTER, INC.
220 Railroad Avenue
Edmonds, Washington 98020

MARIAN KOHN
1023 241st Place S.W.
Edmonds, Washington 98020
Parent and Research Associate, Zoology Department, University of Washington.

SNOHOMISH COUNTY HEALTH DEPARTMENT
South County Office
19701 Scriber Lake Road
Lynnwood, Washington 98036

SNOHOMISH COUNTY PARKS DEPARTMENT
Everett Courthouse (259-9317)
Everett, Washington

SNOHOMISH COUNTY PLANNING DEPARTMENT
Everett Courthouse (259-9311)
Everett, Washington

SUPERINTENDENT OF SCHOOLS
ISD 109
Everett Courthouse (259-0621)
Everett, Washington

SNOHOMISH COUNTY P.U.D. #1
21018 Highway 99
Lynnwood, Washington 98036

BOY SCOUTS OF AMERICA
Evergreen Council, Inc.
1615 1/2 Hewitt Avenue
Everett, Washington

SNOHOMISH COUNTY ENVIRONMENTAL COUNCIL

ADDRESSES FOR AGENCIES LISTED IN THE FILM LISTS

Aetna

Aetna Life & Casuality
Audio Visual Services
151 Farmington Ave.
Hartford, Conn. 06115

A -S

Association-Sterling Films
866 3rd Ave.
New York, N.Y. 10022

Common

Commonwealth Film Distributors
1440 S. State College Blvd.
Bldg 6-K
Anaheim, Calif. 92806

EBEC

Encyclopedia Brittanica Educational Corp.
425 N. Michigan Ave.
Chicago, Ill. 60611

Ethyl

Ethyl Corp.
Corporate Public Relations Dept.
330 S. 4th St.
Richmond, Va. 23219

FAA

Federal Aviation Administration
Film Library AC-44.5
P.O. Box 25082
Oklahaoma City, Oklahoma 73125

GASP

Group Against Smog And Pollution
P.O. Box 2850
Pittsburg, Pa. 15230

JF

Journal Films, Inc.
909 W. Diversey Pkwy
Chicago, Ill. 60614

Motor

Motor Vehicle Mfg Assn, Inc.
320 New Center Bldg
Detroit, Mich. 48202

MTPS

Modern Talking Picture Service
2323 New Hyde Park Rd.
New Hyde Park, N.Y. 11040

MUE

Media For Urban Environment
75 Frost St.
Brooklyn, N.Y.

NAC

General Services Admin.
National Archives And Records Service
National Audiovisual Center
Washington, D.C. 20409

NBC

NBC Educational Enterprises
30 Rockefeller Center
New York, N.Y. 10020

NFBC

National Film Board of Canada
680 5th Avenue
New York, N.Y. 10019

Shell

Shell Film Library
450 N. Meridian St.
Indianapolis, Ind. 46204

LESSON OUTLINE

TOPIC: _____
LEVEL: _____
EST.TIME: _____
SUBJECTS: _____

I. LEVEL V OBJECTIVE

II. LEVEL VI OBJECTIVE

III. TEACHER BACKGROUND INFORMATION

IV. MATERIALS NEEDED

V. ACTIVITY

A. PRE-ACTIVITY _____ Time: _____

B. ACTIVITY _____ Time: _____

C. POST-ACTIVITY _____ Time: _____

VI. RESOURCES

VII. SUGGESTED ADDITIONAL ACTIVITIES